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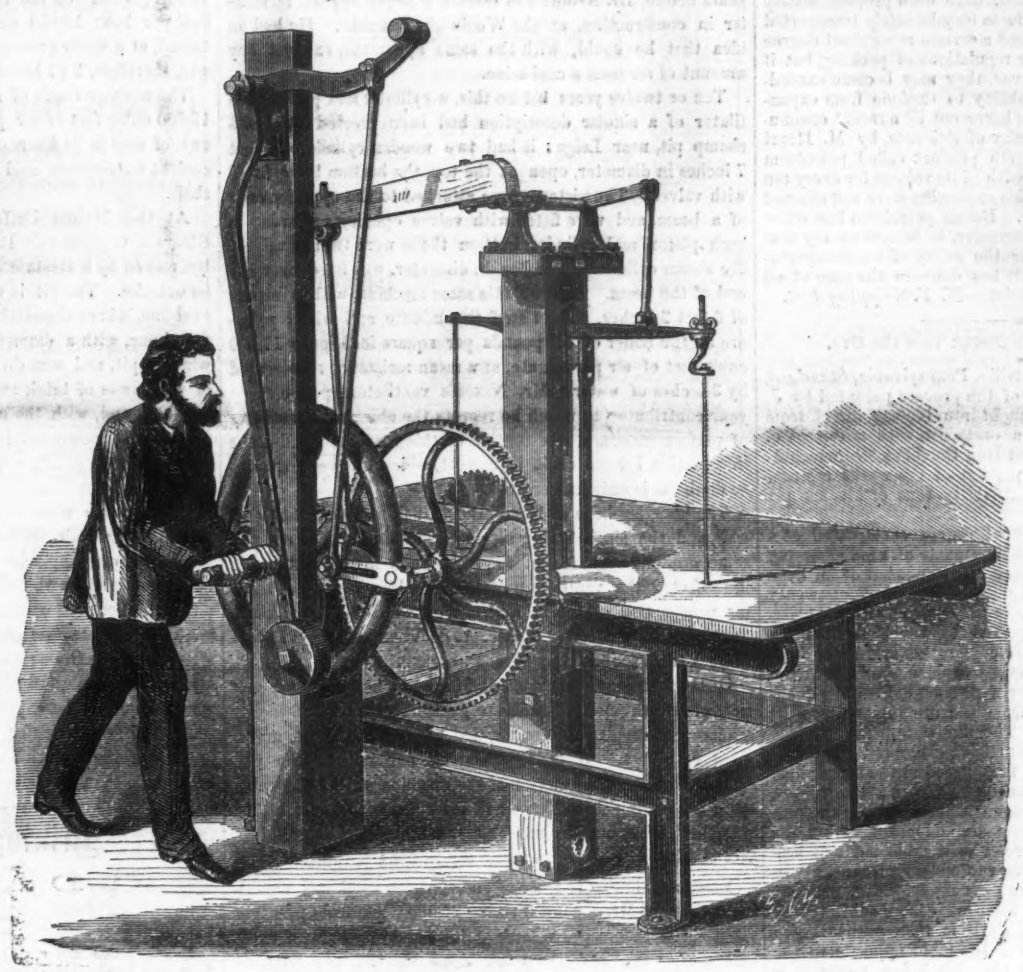
HASSENPFLUG'S HAND-POWER MACHINE.

In the science and the practice of mechanics there are well-known devices, which are employed as reservoirs of power, sometimes, however, mistaken by embryo mechanics, and by theoretical mechanics and amateurs, as producers rather than storers of power. Such are adjustable and automatically moving weights, the swing of the pendulum, the continued rotation of the balance wheel when once put in motion, and other similar devices. The machine shown in the accompanying engraving is a beautiful illustration of the adaptation of means to an end. It is a hand-sawing machine carrying a circular and a reciprocating or gig saw, both of which may be run at the same time by the power of one man, or even of a boy. If desired either saw may be detached while the other is used. The power is applied, as seen, by means of a long pendulum lever swung back and forth, and having attached to its short arm at the top, a pitman connected at its other end with a wrist pin on a balanced gear. This gear meshes with a pinion on the saw arbor, which also carries a balance wheel intended to equalize the motion. To the upright portion of the frame is pivoted a lever intended to drive the gig saw, the frame of which is similar to those in ordinary use, being two crossheads connected together by rods and braces, and moving in suitable slides in the upright. A bar extends longitudinally with the table from the upper crosshead, carrying at one end the gig saw and at the other a guide, passing through the table and guided by a box under the table bed. The connection between the reciprocating saw and the power is by means of a pitman, one end of which is pivoted to the lever before mentioned, and the other to a crank on the fly wheel. These are the principal parts of the machine, which is very simple and not liable to become deranged. If only one man operates the machine where little power is required, as in running the gig saw alone, a treadle is attached to the saw frame on the lower crosshead by which the saw can be driven. A treadle can also be connected to the other end for driving the circular saw, its pitman being attached to the crank of the fly wheel. Either of these may be instantly unhooked, as when two persons are at work, one being engaged in propelling the saws by the pendulum lever, and the other guiding the stuff to be sawed. Or, one may work at the gig saw, and another at the circular saw by means of the treadles, each operating independent of the other.



HASSENPFLUG'S HAND-POWER MACHINE.

The ease of running the machine and the rapidity of its work are truly surprising. On a trial with a full-sized machine we ran both saws by means of the pendulum, with one hand, while two workmen drove both saws through hard seasoned elm planks four inches thick. Although this machine is represented as being exclusively used for sawing, the principle is capable of being extended and applied in various ways, and may be used to run printing presses, lathes, mining drills, etc. We regard it as one of the most useful and valuable machines that have come under our notice. Patented June 11, 1867, by Henry Hassenpflug, of Huntington, Pa., and assigned to himself and Edward Hassenpflug, of Boston, Mass. The machine is on exhibition at No. 94 Bowery, New York city. For rights or territory, address HASSENPFLUG BROTHERS, at this number, or at 262 Eustis street, Southern District, Boston, Massachusetts. See Advertisement.

Children's Labor in the Welsh Mining Districts.

One of the Welsh school inspectors, Mr. Binns, in his last report, adverts to the employment of boys in the collieries as a great hindrance to the spread of education. The condition of children amid the iron works and coal mines of Glamorganshire is, he observes, sad to contemplate, and one that calls aloud for sympathy and redress. They are brought up amid dirt and squalor; in dwellings for the most part crowded and unhealthy, and without any better place for recreation than the adjoining roadway or cinder heap. They are further doomed from too early an age to dangerous and protracted toil in mines. The Mines Regulation act, which prohibits boys under ten years of age under any circumstances from being employed underground, is, he fears, sometimes evaded. The avarice and selfishness of parents will not unfrequently tempt them to make false statements of their sons' ages in order to secure their admission to the coal pit, even for some years before they are physically able to endure the long hour and laborious works which are required of them; and hence accidents, many of which are fatal, unavoidably result. In the coal mines of South Wales these accidents are more frequent and calamitous than elsewhere. In 1866 one person was killed for every 243 who were employed, and one life was lost for every 78,137 tons of coal raised. The reports of Messrs. Brough and Wales, the inspectors of mines in this neighborhood for the last two years, give the details of no fewer than forty-five accidents, which happened to boys whose ages in no case exceeded thirteen years. The former of these gentlemen states: "In my district boys of too tender an age are sometimes appointed haulers when really they possess neither the strength nor mind sufficient for such responsible and dangerous employment. * * * Moreover, when boys are too young they are physically unequal to the long hours usually assigned to trappers." The latter gentleman also concurs in these opinions, and while recording the loss of twenty-five lives by trams, he states that of these no less than sixteen befell boys, and he then adds: "The practice throughout almost the whole of the collieries in the Aberdare valley, is for the door boys, generally from ten to fifteen years of age, to travel in front of the horses, hauling the full and empty trains to and from the shaft, instead of each remaining stationary at his door. Boys of such tender years are utterly incapable of performing such laborious work for twelve hours; and this, I have no hesitation in stating, is, in my opinion, the chief cause of the great fatality under this head. Should it be necessary for the haulers to have boys to travel with them, such boys ought to be older and stronger than those now at work." On this subject Mr. Binns quotes a letter from the Rev. G. Harries, rector of Gelligaer, and honorary secretary of the Llandaff Diocesan Board of Education, in which that gentleman says: "I have known a particular instance in which a little boy under age was very nearly burnt to death in this neighborhood. It is frequently my lot to expostulate with the parents on this subject, when I find boys under age are put to work, and in some instances I have succeeded in getting them sent back to school for a little longer time, but they are soon again taken away and put to work. I am frequently met with the reply, 'The boy is of full age,' and am compelled to be silent, although at the same time I feel sure such is not really the case."

The Petroleum Trade.

While cotton, grain, tobacco, and other leading agricultural staples of the country combined, are universally regarded as the basis of industry and commerce, little is said of petroleum in the same connection, notwithstanding the fact that there is probably as much money involved in the last mentioned commodity as in any other single article of home production. Petroleum, indeed, has become a product, not only of the first necessity, but of the first importance, at home and abroad, each succeeding year since it became a considerable article of commerce, witnessing an increased consumption in every civilized part of the world; and every year seems to develop new methods for utilization. It is not only almost universally employed as an illuminator, but, in the manufacture of soap, candles, wax, lubricating substances, and dye stuffs, and as a motor, it has become of essential use. After the first flush of excitement attending the discovery of petroleum in Pennsylvania, grave fears were entertained that there might be, sooner or later, an exhaustion of the supply, but these fears have been dispelled by succeeding years, during which there has been an increase of production commensurate with the increase of consumption. It is true oil wells are constantly being exhausted, but for each one that proves unproductive, a new one, or more, is sunk, and thus the supply is kept up, and may now be said to be all but inexhaustible.

Petroleum has been discovered in various parts of the world, but thus far the wants of commerce have been mainly supplied by the United States, which has a practical monopoly of the trade. The exports of petroleum from New York since the first of January are, in round numbers, 40,000,000 gallons against 20,000,000 gallons for the correspouding period last year. From the United States, the exports to date are, in round numbers, 70,000,000 gallons, against 42,000,000 the corresponding period last year, an increase of about sixty per cent. The great bulk of the exports are from New York and Philadelphia, though most of the business at the latter port is on New York account. The increase of exports this year is mainly to Continental Europe, as will be seen by our export table in another column, a glance at which cannot fail to prove highly instructive to those who take an interest in the march of progress in this important branch of commerce. Leaving out France, which takes crude almost exclusively, most of the exports to Continental Europe consist of the refined article, which is not only safer to transport, as may be gathered from the fact that vessels carrying crude are subject to an extra insurance of three or four per cent., but is really cheaper to the foreign dealer and consumer. It was with a view to retaining the entire business of refining petroleum in this country that so strenuous an effort was made at the last session of Congress to have the tax on the refined product reduced, and which, though it met with only partial success, will, it is thought, ultimately be accomplished, since a monopoly of the refining process must necessarily add some millions of dollars annually to the wealth of the country.

As to the risks incident to the transportation of petroleum there appears to be a great diversity of opinion, though, as between crude and refined, it is obvious that the former is by far the more inflamable, and, therefore, more dangerous. Any liquid or product that will throw off explosive vapor must, to a certain extent, be dangerous to convey; but if the fear of accident were allowed to operate to the prejudice of common carriers, a severe blow would be inflicted upon commercial interests. Considering the immense commerce afforded by petroleum, the accidents directly or indirectly chargeable to the article, it must be confessed, have been proportionately small. Petroleum and its products may be safely transported when not exposed to heat beyond a certain recognized degree and when carried under proper regulations of packing, but if these regulations be not observed, they may become exceedingly dangerous from their liability to explode from expansion and heat. This opinion is borne out by a recent communication to the British Academy of Sciences, by M. Henri Deville, who stated that the earth product called petroleum increases in bulk by one-hundredth of its volume for every ten degrees of heat; and that if this expansion were not allowed for, explosions must take place. But as petroleum has come to be an article of universal necessity, it is safe to say that ingenuity will devise means for the safety of its transportation, storage and handling, as it has done in the case of all other extra hazardous commodities.—*N. Y. Shipping List.*

Wrought-Iron Blooms Direct from the Ore.

A correspondent of the Pottsville, Pennsylvania, *Standard*, gives the following description of the process patented by J. Jameson, Esq., for making wrought-iron blooms direct from the ore. A company has been organized with a capital of $200,000, called "The Ringgold Iron Company," of which A. Focht, Esq., is President. A portion of the works are now in full operation, making about thirty tons of blooms per week:

"The furnaces, each with two fires, are constructed at a cost of about $1,200, and each is capable of producing ten tons of blooms per week. They are somewhat of an oven shape, having, however, a stack from the top of about twenty feet in height. A refining fire is in front, into which the blast-pipes enter on the side. The gas that is evolved from the fuel passes into a chamber, where combustion takes place and thence the combustion of the gases continues till above the fifth chamber it passes (together with such deleterious qualities as have been taken up from the ore in its progress) through and out of the stack. The five chambers are called in the Jameson patents the deoxidizing chambers. The ores are calcined, then crushed, and first placed in the top or fifth chamber. Into the first and second chambers a small jet of steam is injected, whereby hydrogen is generated for the purpose of aiding in desulphurating and dephosphorating the ores. The floor of the top chamber is a table made of fire-clay blocks, with an opening at the end opposite from the door or entrance through which the raw ore is thrown in. On this table the ore is spread out, and after being here subjected to the operation of the burning gases, it is then pushed down through the opening at the end of the table opposite to the door on to a like table in the chamber below, where it is again spread out, and here it remains for a time, and in like manner passes on to the table of the third chamber; there, after undergoing a like operation, it is passed to the second chamber, thence it goes to the bottom or first chamber. Thus every particle of the ore is equally operated upon. By this time the ore is almost a pulp, and then it is passed into the charcoal bed and refining chamber. Here the loop is soon formed, when it is taken out, and the hammer soon presents you with a bloom of from two hundred and twenty-five to two hundred and fifty pounds in weight. It is not claimed that to make wrought iron direct from the ore has anything new about it. Probably half the blooms made in America are thus produced. Generally, they are of an inferior quality, and involve a large expenditure of fuel and ore. It is not so, however, with the blooms made by the Jameson process. It is claimed that a ton of blooms can be made by this process with about the same expenditure of fuel and ore that it requires to make a ton of pig metal in the blast furnace. The experience of Ringgold shows that two hundred bushels of good charcoal and about two and a half tons of fifty per cent. ore will yield a ton of blooms. This process claims, and the experience here fully establishes that claim, that the ore is not only fully deoxdized, but also desulphurated and dephosphorated. With the single exception of a few blooms made from a certain ore, it has been found by analysis that neither sulphur nor phosphorous were present in the iron made, and steel of the best quality has been made from it. Prior to the Jameson process all experiments to make blooms by the direct process, where the flame was brought in direct contact with the ore, have failed. The difficulties encountered were that the great heat consumed and carburretted the metal, while the too great heat slagged the ore before it reached the refining chamber. By the Jameson process all these points are obviated. The heat is kept down to that temperature and the blast is so regulated, that the metal is not consumed or carburretted, nor the ores slagged, but, on the contrary, the ores are completely deoxidized, and by the chemical influences brought into operation in the manner before described, thoroughly cleansed of sulphur and phosphorous. The cost of making blooms by this process, is about $6 per ton more than the cost of making pig metal in the ordinary blast furnace."

Practical Letters.

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

ON THE VENTILATION OF COAL MINES.—NO. IX.

BY J. W. HARDEN, M. E.

THE AIR PUMP.

This is employed in the ventilation of both mines and buildings, and the methods of its adaptation are quite varied. My first acquaintance with it, as such, was during an engagement on the air culverts, drainage, and other outworks in connection with the Hospitals for Consumption, at Brompton, near London, in 1845; at which time Dr. N. Arnott, of well-known reputation in regard to such matters, was engaged on the ventilation of that building.

At each end of a beam, moved by a small steam engine, a wooden barrel 3 feet, or 3 feet 6 inches square, was placed; in each of these worked a piston of wood; above and below the piston curtain-valves were fitted. In the winter, the air was drawn through a chamber, over heated plates, and from 2,000 to 3,000 cubic feet per minute was driven through air flues into the wards of the hospital. The machinery was made self-regulating, and all went along smoothly and easily. Two years before, Dr. Arnott had erected a larger apparatus, similar in construction, at the Woolwich Barracks. He had an idea that he could, with the same apparatus, exhaust any amount of air from a coal mine.

Ten or twelve years before this, a cylinder and piston ventilator of a similar description had been erected at Hainchamp pit, near Leige; it had two wooden cylinders 11 feet 7 inches in diameter, open at the top, the bottom being fitted with valves. The pistons were attached to the opposite ends of a beam, and were fitted with valves opening upwards; in each piston and cylinder bottom there were twenty valves; the steam cylinder, 13 inches in diameter, was fixed over one end of the beam. In 1853, this same machine, with a stroke of 6 feet 2 inches, and 14 strokes a minute, and with a pressure on the boiler of 41 pounds per square inch, gave 17,000 cubic feet of air per minute, at a mean resistance represented by 3 inches of water. Mr. Nixon's ventilator, spoken of by your contributor, in which he regrets the absence of statistics of performance, is a modification of this machine; and if the information I have of it is correct, which I have no reason to doubt, it is only just erected.

The plunging-bells of Hartz, the "Duck machine" of Cornwall, and the single-acting airometer of Belgium, if not the same, are but varieties of the same rude instrument which has effected the ventilation of the metalliferous mines there for nearly two centuries, and out of which has grown the double-acting airometer of Mr. A. de Vaux and the "Patent Mine Ventilator" of Mr. Wm. P. Struve.

Of the former, that erected at Mairhaies, near Seraing, consists of two airometers, similar to gasometers, 11 feet 6 inches in diameter, dipping into water, and having an alternate movement of 5 feet. With 12½ strokes per minute, the volume of air due to the motion of the machine was 12,890 cubic feet; but, owing to leakage and injurious space, only 11,500 was obtained at a water guage of 1.28 inches. The useful effect is said to be 45 per cent. of the power transmitted.

Your contributor tells us of one of these machines, experimented on by Mr. Jochams, giving 24,000 cubic feet of air per minute, the theoretical volume of its capability being 30,000, and says, "the effective work done was 93 per cent. of the theoretical volume it was capable of moving."

At a time when the steam jet controversy was subsiding, being engaged in opening up a large field of clay ironstone (carbonate of iron) through the dilapidated shafts of coal-pits that had been worked out, and being brought into contact with a condition of things totally adverse to the use of the furnace as a ventilating power, in which I had up to that time found all that was necessary to meet the requirements of more than one large colliery, and knowing nothing more of Struve's ventilator than what I had read, before adopting any of the mechanical methods represented, of which there were then examples enough in the country, I made my way into Wales, and at Eaglebush Colliery, near Neath, I found the first of "Struve's Patent Mine Ventilators." The pit to which it was applied was not unlike some in this valley. It had an upcast shaft 48 feet deep and 3 feet 6 inches in diameter, rising at the head of an inclined plane, 1,800 feet long, dipping at angles varying from 20 to 25 degrees. At about 20 feet from the shaft, and connected with it by means of a culvert 5 feet by 6 in cross sections, were built two cylinders of masonry of 14 feet inside diameter and 16 feet high, and two interior cylinders, of the same material, 4 feet 6 inches in diameter and 9 feet 6 inches high; the space between being filled with water to a depth of 7 feet, forming, in ground plan, three concentric rings—masonry, water, masonry. Over the space in which the water stands, suspended by rods and chains, the latter passing over sheaves, are two airometers 12 feet in diameter and 8 feet 6 inches long, made to balance each other, and to move vertically in the water, directed by guide rails. An alternate motion is given to them by means of a pair of cranks, fitted in opposite directions upon a shaft connected with a steam engine having an 8-inch cylinder and a stroke of 2 feet 9 inches. This giving a rotary motion to the cranks, a vertical motion is transmitted to the airometers, by means of the chains connecting them. Across the culvert, at its junction with the air chambers formed by the inner circles of masonry over which the airometers work, four air ports, each four feet square, are made and fitted with valves, which, on the rising of the airometer, admit the vitiated air from the mine. On the opposite side are four more ports, fitted in a similar manner, which, on the descent of the airometer, dis-discharge the same into the atmosphere.

The culvert being somewhat reduced in area, and continued up the outside, and, moreover, being connected with the upper chamber, which is formed by the height of the outer cylinder of masonry being above that of the inner, and being covered with planking, to which ports and valves are fitted as in the lower chamber; this, altogether, makes the machine double-acting there being 32 feet area for exhaust and 32 for discharge to each airometer. With the exception of the outlets for the air, and a doorway to admit of inside inspection, the whole is banked up with earth to a height, a foot above the water line, this being also the level of the top of the shaft. The cost of erection, including engine, boiler, airometers, and masonry, was $2,500, and, if memory serves me correctly, it was erected in 1847.

Experiments made upon its performance in 1852 resulted as follows: With a speed of 75 linear feet per minute, with 40 lbs. pressure on the boiler, at a consumption of 93 lbs. of coal per hour, 16,950 cubic feet of air per minute was obtained, at a water pressure of 1.55 inches; the power utilized was, therefore, 2.67 horse power per lb. of coal.

The average result of its daily working when I saw it was 13,600 cubic feet of air per minute, at a consumption of 21 cwt. of coal in 24 hours, or 8,752 cubic feet of air per lb. of coal, at a resistance said to be 12 lbs. per square foot of the shaft.

At the Middle Duffreyn Colliery I found another of Struve's ventilators. It had airometers 20 feet in diameter, moved by a steam engine with an 18 inch cylinder, and 3 feet stroke. The pit is worked by means of two shafts—an oval one, whose diameters are 17 feet and 12 feet, and a cylindrical one, with a diameter of 9 feet. The former was the winding pit, and was divided by a brattice, the lower portion of which was of brick and mortar. The latter was the pumping shaft, and, with the winding side of the larger shaft, had formed the downcast in the ventilation; the smaller side of the winding shaft, with an area of about 43 square feet, and a furnace at the bottom of it, had been the upcast.

Being unable with this arrangement to obtain more than 32,000 feet of air per minute, and requiring more, Struve's ventilator was applied. The winding side of the large pit being retained as the downcast, the smaller side with the pumping shaft was connected by means of a culvert with the ventilator, the two forming an upcast area of 100 square feet, after reducing the space occupied by the pump trees. By means of this adaptation 60,000 cubic feet of air per minute was obtained, at an expenditure of 6.5 lbs. of coal.

At the Westminster Colliery, in North Wales, I saw another of these machines, but a description of it would be little more than a repetition. I will, therefore, pass it by.

Mining Summary.

GOLD AND SILVER.

Colorado.

The *Colorado Miner*, published at Georgetown, in its issues of Aug. 27th, and September 3d, has very satisfactory reports, in condensed form, of many of the prominent mines of Leavenworth, Sherman, and Brown mountains, penned by the editor, who visited the localities in person. He thus writes of operations on Leavenworth mountain:—Work is still progressing on the Herkimer. The vein has widened in the past forty feet to an unknown extent, and a cross cut is now being driven to find the north wall. This cross cut has been driven twenty feet through crevice material without finding the wall. Eight feet of the gangue now being taken out, carries a large amount of argentiferous galena. There are many spurs and feeders coming into the vein from all directions, thus enlarging the vein to a great extent. Considerable second class ore is on the dump. A short distance south-west from the Herkimer we found Pearson and Fellows actively at work on an immense chimney on the Awanda lode. They are sinking a shaft about 150 feet west of the discovery, working out six feet of gangue and mineral, without as yet, any defined walls. They run in on the vein some twenty-five feet, well timbering the cut, and are now making preparations to put on a windlass. They have taken out some ten tons of ore that looks remarkably well. About seventy-five feet east they have commenced an adit, the vein at this point carrying four inches of solid argentiferous galena, and from two to three feet of gangue. We have no doubt but the ore now lying on the dumps will more than pay for the work done. On the George Law lode no work is being done at present. The shaft is about 20 feet in depth, with a three foot crevice. The mineral vein we saw plainly, but being unable to descend the shaft, could not accurately determine its width. We found some little ore on the dump, which was argentiferous galena and black sulphurets of silver, carrying blue and green carbonates of copper. Our opinion is that this mine might be made productive by a little development. At the General Marion we found work progressing finely. The shaft is now 30 feet deep, with a three foot crevice between walls. The mineral has been closed out for some distance, but is now making its appearance again

There is not, as yet, any regular vein of it, but is generally disseminated through the gangue, and appears to be concentrating At the Equator we found a scene of busy life and activity. The west shaft on this celebrated mine is now 100 feet deep, at which point sinking has been suspended for the present, and drifts are being run. Sinking will be resumed as soon as a whim can be erected and got in operation. The east drift is eighty feet in length, carrying in the roof from six to fifteen inches of first class ore. For a few feet west of the heading it has been pinched, but is now making its appearance again. A stope has been started above this drift, but is not worked at present. The west drift is sixty feet in length, with fourteen inches of mineral in the heading, somewhat intermixed with gangue. In the stope above, which has been driven about forty feet, the mineral vein varies from eight to twenty-two inches in width. Besides this regular mineral vein there are many small seams of mineral running through the gangue, the extent of which we were unable to determine. As high as four tons of ore per day has been raised from this shaft. About five hundred feet east another shaft is being sunk, now seventy feet in depth, with a two foot ore vein of gangue and mineral. But little first class ore has been raised from this shaft, but in second class it has been very productive. The mine has produced during the season thirty tons of first class ore, twenty-two of which has been shipped to Balbach's works, at Newark, N. J., for reduction, and the balance is now being packed for shipment. One hundred tons of second class ore has been raised, sixty tons having been reduced at Huepeden, Wolters & Co's. works, giving an average yield of $200 per ton. This second class ore has more than paid all the expense of working the mine. A wagon road is now completed to both shafts, which will greatly reduce the cost of transportation of ore and supplies. Boarding houses have been erected near the creek, at a convenient distance from the mine. It is an incontrovertible fact, well known to every person here conversant with our mines, that the Equator is paying a large profit over the cost of development, transportation of ore and reduction. Development will be continued during the winter, in sinking the shafts to a greater depth, and opening new levels. The success of this company should excite others to emulate their example, in opening their property to pay.....

We learn that the owners of the Ashley Franklin lode, situated on Griffith mountain, will soon commence driving an adit to connect with the shaft, in the bottom of which they now have eighteen inches of mineral.....Of some of the mines on Sherman and Brown mountains the writer reports as follows: At the Terrible, we found the development of the mine progressing rapidly and favorably. We descended the shaft, which is 56 feet deep, and examined first the east drift, which is 100 feet in length. In the heading of this drift, on the north wall, the solid mineral vein is full eight inches in width, and lying by its side a large vein of blue silver-bearing gangue. The mineral vein in this drift followed the south wall to within 20 feet of the heading where it shifted to the north wall. The ore vein in the roof of the stope above, is from six to sixteen inches in width, and lies against the south wall. The west drift is now 80 feet in length, with eight inches of solid ore in the heading. The ore vein in the roof varies from six to eighteen inches in width. The drift is run six feet above the floor of the east drift, leaving that amount of ground for understoping. In the face of this understope, where the solid mineral is fifteen inches wide, two tons of ore were extracted and sold to Jno. T. Herrick, at the smelting works, that gave an average assay, after crushing, of $1,024 in silver to the ton. The mineral vein in this lode, as far as developed, 194 feet in length along the vein, is continuous, having never closed out, and is without fault or break, except in the east drift, as noted above. The amount of ore in sight is sufficient to keep a large force employed for months to come in its extraction. The mine is well timbered, the stulls in the east drift looking as if they were placed there to remain for the next hundred years. The drifts are dry, but the shaft is wet, occasioned by the sepage of surface water. A cistern has been put in on the floor of the east stope, so arranged that nearly all the sepage is caught in it, and carried to the surface by a pump. As soon as the necessary connections can be made with the pump and the shaft, sinking will be commenced. The shaft house is about 24x36 feet in size, of ample proportions for the machinery necessary for hoisting, pumping, crushing and dressing. A portable engine and boiler furnishes the power necessary to drive the works. The ore is hammer-dressed, the first class crushed and sacked for shipping. When the works are complete the second class ore will be crushed and dressed up to first class. The crushing is done by a Dodge crusher. The dressing works consist of a sizing riddle, that separates the ore and gangue into five distinct sizes for jigging. Each size is jigged separately. This is absolutely necessary in order to effect a thorough dressing of the ore without waste. The jigger is not yet completed. It will be what is known as the piston jigger. The screen upon which the ore is placed is stationary. The water is forced upward through the screen by a piston working in a chamber in one end of the jig-box. The gangue passes off continuously over a sheet iron apron, while the ore passes beneath it. Eleven tons of first-class ore is now crushed, sampled and sacked, ready for shipment to Balbach's works at Newark, N. J. As an ore-producing, profit-paying mine, the Terrible stands second to none in the United States already, and when the workings are extended to a greater depth, with four fold the amount of ground opened and ready for stoping, the yield will be immensely increased. Nothing but unfailing and untiring energy and perseverance has placed this mine in the position it now occupies. At the Brown but a small force is at present employed in stoping above the upper adit. The force, we understand, will soon be increased, and stoping commenced in the lower drifts. A fine body of solid mineral is exposed at the present workings, it being from twelve to sixteen inches in width. The Coin we found undergoing development with the shaft 38 feet deep. The vein is considerably pinched at this depth, there being but about four inches of solid mineral. Indications are invaluable for an increase. The Edwena is being actively worked with discovery shaft 30 feet in depth. This has every appearance of being a large and strong vein, but further development is necessary to make it self-sustaining. The crevice is full six feet wide, and split by a horse in the centre. On the south side there is from two to four inches of argentiferous galena, the balance of the crevice being gangue. We have no doubt but active development will soon place it on a paying basis. The west half is owned by C. J. Goss & Co., and the east half by Messrs. Goss & Bramel. The Lily we found undergoing active development, and yielding a large amount of ore, rich in silver. The discovery shaft is 53 feet deep, and 60 feet east there is another shaft now 42 feet deep. Between these two shafts a drift has been run for the purpose of securing ventilation, as well as stoping ground. This ground is being understoped, and is yielding between 1,500 and 2,000 pounds of first and second class ore daily. The ore vein in the drift varies from 22 to 36 inches in width. Of this there is from one to three inches of gouge, from four to five inches of solid argentiferous galena, the balance being gangue carrying a large percentage of mineral. The solid galena vein is rapidly improving in size as well as richness. The ore is not assorted, the first from the second class, but is all sent to the reduction works together. Some fifteen tons of this ore is now in the mill of Huepeden, Wolters & Co., undergoing treatment. The finest specimens of native silver ever unearthed in this district have been taken out very recently. The Lily we class among the profit paying veins of the district, and that it is yielding a handsome revenue we have no doubt. The east half is owned by Messrs. Goss & Marsh, and the west half by a Boston company. On Sherman mountain the first lode visited was the Snowdrift. This vein was opened by shaft, but owing to its dip it was found impracticable, and has been opened by a tunnel. The tunnel is 67 feet long, and first struck the vein 40 feet from the entrance. From this point to the heading the vein has a very heavy dip, for a distance of about ten feet lying nearly flat. At the heading the vein is straightening up, the dip being about 20 degrees. At this point they are now excavating to make room for a windlass. The ore vein is from four to fifteen inches wide, of argentiferous galena and rich gangue, in many places the whole being decomposed. Within a feet of the heading there is five inches of solid mineral. Forty feet from the portal of the tunnel two pounds of decomposed material was taken—the vein being six inches wide—which gave an average assay of $354 in silver to the ton. Other tests of the vein have been made, giving a return, in one instance, of $530, and in another $262. We see no reason why this vein cannot be made to pay, and we believe that the men operating it will soon prove the assertion true. The east half is owned by the Fuller Gold and Silver Mining Company. On the Silver Plume lode we found discovery shaft to be 15 feet deep, showing a four foot crevice. On the north side there is six inches of gouge, the balance of the crevice being very fine gangue, literally filled with fine particles of argentiferous galena. Some very fine specimens of native silver have been found in this gangue. The lode is being actively worked, and bids fair to soon become a paying investment. It is owned by the Snyder Gold and Silver Mining Company. The Hickman has a shaft thirteen feet in depth, with a three foot crevice of about the same general characteristics as the Silver Plume. This vein is owned by the same company. The Peters lode has a shaft eighteen feet in depth, with a five foot crevice. The ore vein is twelve inches wide, principally gangue interspersed with very fine particles of galena. Development will undoubtedly place the two last mentioned veins in the paying list. This lode is owned by the Thornton Gold and Silver Mining Company. Mr. Snyder, of Mill City, Superintendent of the Snyder company, cleaned up a short time since, from one-eighth of a cord of surface ore from the Albro lode, situated in Morris district, 9 ounces and 6 pwt's. of gold. It was run in an arastra. This yield is almost unprecedented. The company have two arastras running, and we learn have been eminently successful. Work was resumed on the celebrated Anglo Saxon lode some two or three weeks since, and we are able and happy to inform those who have taken occasion to question this being a true fissure vein, that they have now a large vein of ore, that is daily productive. We are more than gratified at this, because the failure of this vein to yield ore last fall has been used against us and our interests. How are you croakers? We are pleased to be able to announce that the Baker mine is again yielding a large amount of first-class ore. In sinking a shaft to connect discovery adit, which is 187 feet in length, with adit No. 1 east, which is 200 feet in length, they came upon a fine body of mineral, from 15 to 20 inches in width, about 25 feet below the floor of discovery adit. They are now drifting on the vein each side of the shaft. The full width of the crevice at this point is between four and five feet. They are running a new adit on the vein 60 feet above the discovery, in which they now have ten inches of solid mineral. The ore is argentiferous galena, carrying zinc blende, stephanite or brittle silver, and fahlerz or argentiferous gray copper. A closely selected specimen of stephanite gave an assay of $16,024 per ton. Another assay made from a specimen supposed to be better than the average, gave $1,808 to the ton. The furnaces for the reduction of the ore are now completed, and will be started up next week. Extensive developments are being made on the Astor lode, situated on the summit of Democrat Mountain. A shaft house has been erected on discovery, and everything is being arranged in the best possible shape for the accommodation of the miners employed. At this shaft there is now out 150 tons of second class ore, that will probably yield $80 per ton, and 20 tons of first-class. There has been taken from this shaft, and treated, one ton of ore that gave an average assay of 611 ounces, and 8 tons that assayed 200 ounces. The ore vein is now from 18 to 20 inches in width, consisting principally of decomposed sulphurets. Shaft No. 1 east is 25 feet deep, with the ore vein more solid. In this shaft the mineral vein is from 16 to 20 inches in width, and producing a large amount of ore. There is now on the dump eight tons of first-class ore, that will yield $200 per ton, and 50 tons of second-class. The lode is opened in six different places, developing it fully 1,600 feet in length, on the surface. The Astor justly occupies a first-class position among the properties of this district. It has been more than self-sustaining, having paid a large profit, so far, over and above the cost of development .....The Central City *Register* says the shipments of bullion for the month of August foot up $175,000, or about an average of $47,000 per week, a result highly satisfactory to all interested in Colorado.

California.

Alpine County.—The Mt. Bullion correspondent of the San Francisco *Times* continues to review the more prominent mines of that locality. His last letter bears date Aug. 14, and reads as follows:—In my two former letters I attempted to convey some faint idea of what the prospects of the Imperial, Mount Bullion and Monitor consolidated Tunnels were based upon, viz: large belts of argentiferous quartz lodes, which, from superficial prospecting, have given promise of great richness.

THE MORNING STAR MINE.

The Morning Star Company commenced their operations upon precisely the same prospects as the above named companies, and the result, when they reached their ledge by a tunnel of some 800 feet in length, was a mass of rich argentiferous grey copper ore, unsurpassed by any development of the kind on the Pacific coast. The Morning Star mine is located in the Great Mogul District, two miles from the town of Monitor, and at an altitude of 7,800 feet above the sea, in a well timbered country, abounding in grass of the finest quality. Now, I wish the items of wood and grass to be particularly remembered, for as an old and experienced metallurgist once observed to me, those two items always help to swell the button of the assay. The company cut their ledge at a depth of some 300 feet, and found it defined on the west wall by a selvage of clay eight feet thick, but the east wall has not yet been reached, (the tunnel penetrates the ledge from the west), although they have drifted east at least fifty feet. The ore in this ledge, like that of the Comstock and all other silver mines, lies in chimneys, and never fills the entire width of the ledge. The first body of ore that was struck was of a refractory nature, but would and did pay well for shipping to Swansea. Something less than a year ago the company decided that the depth was not sufficient to warrant large outlays in thoroughly exploring the vein, and directed their Superintendent to commence sinking in the ledge, which he immediately did, and at a depth of 75 feet they found their reward in the shape a much richer and less refractory ore. They continued the shaft on down to 100 feet, and thence run a cross cut into a body of ore 15 or 20 feet. Concluding from the lay of the ore that another drift 25 feet above, or 75 feet below the opening of the shaft, would demonstrate the uprise of their chimney, they made another cross cut at that point, and had their expectations confirmed by finding a continuity of the ore at the 75-foot level. In the work of prospecting in this shaft they have raised from 75 to 100 tons of ore, that gives a yield of upwards of $100 per ton in gold and silver, and forty-one per cent. of copper, thus placing the value of the ore at a figure not less than $200 per ton, even at the present low price of copper. There is a large body of this quality of ore now in sight, with the most positive assurance that the mine can give its owners unlimited stores of the same quality, below and around there. This is a cupriferous ore, and with the present imperfect knowledge of our metallurgists, will pay the owners of the mine better for shipping than for home treatment, although from limited experiments in San Francisco, they are led to believe that at no distant day it will pay the company to erect smelting works at the mine for its reductin. While they were making explorations on their first level, the air became so bad that they were obliged to sink a shaft from the surface for ventilation, which at the same time they made sufficient for a working shaft, being four by eight in the clear, and timbered in a substantial manner. The present Board of Trustees, with M. Scott as President, have decided upon going to work in a thoroughly systematic style, and for that purpose have shipped from San Francisco a boiler, engine, and complete set of hoisting works, sufficient for working the mine to a consderable depth beyond their lowest levels. The Superintendent, William Seaman, is at present working a road from the tunnel to where the hoisting works will be erected over the main saft. He has the mine and all about it in excellent condition, and were he to receive orders for shipping ore, he would not be delayed a moment from the prompt execution of such order. In my opinion, the company ought to ship at least a thousand tons of ore before the snow flies, thus insuring a sufficient amount of money for the thorough development of the mine, and possibly the payment of one or two handsome dividends to the stockholders.

A SINGULAR DISCOVERY.—There is a most remarkable occurrence in connection with this mine—that of the finding of a silver arrow-head imbedded in a solid piece of ore, with the small piece of the root of a tree attached to its point. This great curiosity was found by Mr. D. Davidson of the Silver Creek mill in handling over a lot of the ore hauled to his mill for experimental tests. This occurred some time in September, 1867. I saw the arrow-head the next day after it was found. It was about four inches long by an inch broad at the base, where it was attached to the shaft, and split down about an inch, and pressed apart, evidently for the purpose of giving it a better hold on the wood of the shaft. At the point it was about half an inch wide, and the whole head was of a uniform thickness of an eighth of an inch. The silver was slightly alloyed with tin, but otherwise very pure. It was perfectly incrusted with rich sulphurets of silver about half an inch thick, which, being scaled off, thus revealed this the most wonderful relic of an early inhabitation of the Sierras. The depth of the ore, from which the arrow was taken, was not less than 300 feet. Will some of your wise men of the Academy of Sciences tell us where, how and when this wonderful relic got into the fissure that is now filled with the vein of the Morning Star mine. I urged upon Mr. Davidson at the time the importance of sending it to the State collection of curiosities for preservation, and have since been informed by him that he gave it to our County Judge, Henry Eno, Esq., for that purpose, which is the last I have heard from it. If it has not been placed in the State collection, by the Judge, it should be at once, with a carefully prepared memoir of its discovery. Having exhausted my space for this letter, I will briefly say that the enclosing rocks of the mine are porphyritic trap intermixed with basalt, and the vein stone is a magnesian rock, much decomposed in the lower levels where the deposits of rich ore are found. I must reserve the Tarshish and Leviathan mines for a future time, as time and space forbid more in this.

Nevada County—We learn from the *National* that the Empire mill, Capt. Lee, Superintendent, after a run of twenty-two days, cleaned up $40,000.....There is a good deal going on at Meadow Lake just now; many of the mining companies doing the annual work on their claims, which is required by the local laws of the district; other companies, now that the snow has melted off, are developing their claims, and penetrating to lower levels; while the mill companies are preparing to start up, and trying to solve the mystery whether the rebellious ores of the district can be overcome. The Virginia *Enterprise*, August 12, says: The Mohawk & Montreal Co's mill, at Excelsior, starts up on next Monday, on ore from the famous mine near by, belonging to the company.

Nevada.

The Comstock.—We learn from our exchanges the following facts relative to the mines on this lode:—Crown Point shipped $71,657 in bullion on August account; Kentuck shipped $119,018 89 during August, Savage, $160,600. The first shipment of bullion from the new mill of the Sierra Nevada Co. consisted of a bar worth $1,352,32, ($1,299.66 in gold and $52.66 in silver)—the product, in part, of the first run. Everything about the mill and mine is in good condition, and work is progressing favorably. Confidence shipped $17.300 in August.

New Mines.—Some very fine new mines are reported at a point 35 miles from White Pine in a northwesterly direction from Robinson District, and about 50 miles in a southerly direction from Egan Canyon. The lucky finders assert that "the leads are from six to 100 feet in width, and many of them are traceable for half a mile with good ore at the surface throughout. The ores will yield from $90 to $270 per ton. The party have sunk a shaft on one of their leads to the depth of 25 feet, taking out about 50 tons of first-class ore. There is an abundance of water near at hand."

Reese River.—The *Reveille*, Sept. 4, has the following account of the South American mine. It is now about sixteen months since ground was first broken on this mine. During that long period the managers and shareholders have experienced a good deal more than the ordinary amount of disappointment always attending mining enterprises, followed at times by a short season of encouragement and bright hopes only to be dashed and succeeded by another gloomy period. Through all these vicissitudes the plucky managers and still pluckier shareholders have never weakened; work has never ceased and the sinews of war were never wanting. Indeed, we know of no company in this portion of the State whose perseverance under adverse circumstances has been as great, or who have so steadily furnished their agents here with means when it looked more than doubtful whether the venture would ever prove anything but a dead loss. This is owing to two circumstances: first the solidity of the men forming the company, and second, the well deserved confidence which they repose in the capacity and integrity of their mining superintendent and business agent, Messrs. Triplett and Godwin. A 4×8 shaft was sunk to the depth of 160 feet before any ore was struck. At this point they struck a body of very good ore, but the ground was much disturbed, and consequently the ledge much broken, so much so, that after running 185 feet of drift, which only yielded 60 tons of milling ore, they were compelled to abandon it. The sinking of the shaft was not interrupted until it reached its present depth of 314 feet, the ground showing great disturbance the whole way. Fifty feet below the first level, or 230 feet from the surface, another level was started, and explorations made on a length of 116 feet without meeting with anything satisfactory, owing principally to the disturbed condition of the ground above mentioned. No other level was started until the shaft had reached its present depth. From this point a drift was started in a southerly course which was pushed 145 feet without meeting with anything encouraging. Indeed the disturbances

above had been so great that the course of the ledge could not be determined at that point. It was evident, however, that the southerly course which was being followed was not the right one; so the level was turned in a westerly course, and, after running 90 feet, the ledge was struck on the 4th of July last. Like pretty much all the ledges in Lander Hill, it is of an average thickness of one foot, and of the usual quality of the ores of that hill. From ninety to one hundred tons have been extracted, and are now piled in the ore house at the mine, which we feel safe in saying will pay $200 per ton. As the company have never been short of funds, they have not had to rush to mill with the first ten tons of ore extracted, but have accumulated 140 tons which will be hauled to the mill next week, and we predict that they will not turn out far from $20,000.

White Pine.—The new district of White Pine, says the *Reveille*, promises to be a prolific source of litigation, if not of bloodshed. The people of that district appear to be divided into two factions; the first composing the original locaters of the mines and their friends, and the second the later arrivals or jumpers, as they are called by their opponents.

Humboldt.—The *Winnemucca* of August says: "Gold Run is to have a quartz mill at the mines. The Golconda Company have made arrangements with Mr. G. W. Holt to remove his mill from this burg to a small creek having its source near the Golconda mine, and it will reduce ore from the mine. The distance from the mine to the mill-site is three quarters of a mile. The mill is propelled by steam, and will be so rebuilt as to crush six tons per day. The water is failing in the Golconda mill ditch, but there is still nearly enough to run the mill constantly up to its full capacity. This steam one will increase the bullion shipment from the Golconda." The same paper, Aug. 13, notices the arrival of Mr. J. M. White with 2,508 ounces of Golconda bullion, and adds: "the like or more can be depended upon each week hereafter."……Speaking of the Elmira Silver Bullion Company it says: "This company, organized in New York for the working of the Elmira mine in this district, has taken on new life and vigor, and will soon be prepared to go forward with the active development of the mine. Work has been suspended for some time, owing to financial embarrassment at the East, but every thing is now arranged for an early resumption of work. With a mine so promising as the Elmira, much wonder has often been expressed that the owners would permit it to lay idle."

Idaho.

REPORTED DISCOVERY OF NEW RICH MINES—GREAT EXCITEMENT—STAMPEDING.

We find in the Helena *Post*, August 28th, the following account of the discovery of a new gold field in the Coeur d'Alene mountains in northern Idaho. It runs thus:—From Mr. David Lusk, just arrived in this city, we learn that fabulously rich placer mines have been discovered in the Coeur d'Alene mountains, on the head waters of the Coeur d'Alene and St. Joseph rivers. These new diggings are not the same as those on the Clear Water, recently reported by us [reproduced below —ED] but are a long distance further north. They are three hundred miles from here, and are creating an intense excitement, especially on the other side of the range. Mr. Sweeney, formerly of Washington Gulch, has been prospecting in the Coeur d'Alene mountains for two years, and "struck it rich" about four weeks ago. His claim is situated on a stream forty-five miles in length, which has been named, after him, Sweeney River. From this ground he obtains prospects of one dollar to the pan, in a strip of pay gravel four feet deep and twenty-five feet in width. Good prospects have been obtained all along the banks of this river, and two hundred men are now engaged there opening claims. Sweeney's is the only one upon which a sluice is running. On Booth's River, seven miles southwest of Sweeney's River, prospects of from twenty-five to seventy-five cents to the pan are obtained, with a pay streak six feet in depth and 18 feet wide. Upon still another river from ten to fifteen cents to the pan is obtained. Tributary to all these rivers are numerous gulches, in which good prospects are obtained, in fact, the whole of that section of country seems to be a net work of rich placer mines. There are, altogether, in these new diggings, about seven hundred men, and immense numbers on horseback and on foot, and with every conceivable character of an outfit, are hurrying to them from every point of the compass. On his way from there, our informant met fully three hundred persons, among them fourteen women, on their way to the new mines. Billiard tables, fixtures for restaurants and hotels, in fact everything required in a large mining camp was being moved in. All western Montana is in a fever of excitement. The scarcity of water over the range offers no present inducement for our miners to remain, and they are hurrying off to the new diggings to such an extent that some portions of the country seem almost deserted. At Missoula, the crops are all standing ripe in the fields, but it is impossible to obtain hands to harvest them. Six dollars per day in gold is offered for workmen, but all think they see a fortune before them, in the Coeur d'Alene mountains, and cannot stop for any such money. The proper means by which to reach these mines, is to follow the Mullen Road to a point sixteen miles beyond the Bitter Root ferry, and there take the trail leading to the left. Following this trail fifty miles in a southerly direction, will bring the traveller to Sweeney's river, and the centre of the new gold field. These new mines are in the territory of Idaho, and the rivers upon which they are situated are the sources of the Spokane. Many of our readers will remember the remarkable richness of the mines of Florence, and it may interest them to know that both the Clear Water Mines recently reported by us and the Coeur d'Alene mines, which we report to-day are in the same general range of mountains—the dividing line between Montana and Idaho. It would be reasonable from present appearances to suppose that these mountains are again to astonish the world with their riches; and it would also seem probable that mines will be discovered on the Montana side of them fully equal to those on their western slope……Following is the *Post's* account of the new mines on Clear Water Creek, mentioned above:—We have received information concerning the great gold excitement which has produced such a stampede from Beartown and vicinity, and almost depopulated that section of the country. The new mines are situated on Clear Water Creek, in the Coeur d'Alene mountains, fifty miles across the range from Fort Union, and eighty-five miles from there by trail, and forty-five miles southeast of the once famous Florence, Idaho. A bar has been discovered there seven miles in length, and about four hundred feet in width, the dirt upon which, so far as tested, is from four to twelve feet in depth, and prospects from ten cents to $1.85 to the pan. The creek below the bar prospects well. There is no grass within ten miles, and it is impossible to keep horses there. The trail is very rough, and no wagons can reach the new mines. Eight hundred men, among which are representatives of Lewiston, Walla Walla, Beartown, and all western Montana had poured in there a week ago, presenting to view one of the most motley assemblages of men ever seen in America. Many of them are dead broke, and this too when provisions and all the necessaries of life are extravagantly high. Tobacco is worth $4 50 per pound, and all other articles bring a corresponding price. A ditch about one and a half miles in length has been brought in upon one portion of the bar, and furnishes a good supply of water.

Arizona.

The Prescott *Miner* of the 8th ult. has information of the discovery of what promises to be a rich ledge, one and a half miles above Gray Co.'s stamp mill in Big Run District, by Mr. R. Smith, and named by him the "Forest." It continues:—"They sunk a hole upon it and found it to be about four feet in width. When Smith came to town, he brought a piece of the rock with him, had it tested by F. A. Cook, who says it assayed $240 to the ton, in gold, with a wee bit of silver. Smith and Gavin are now building an arastra and wheel, to crush ore from the 'Forest' and 'Badger' lodes." We also learn from the same paper that Osborn & Gavin have found excellent prospects in the bar opposite the one upon which Gray and Co's mill stands, and they are having a ditch dug to it from the tanks on Justice's old auxiliary claim……Cal. Jackson & Co. have purchased the Hydraulic diggings on Lynx creek, known as the Excelsior, from Little & Taylor. The new owners have commenced work…… Some six or eight arastras are being run at Walker's camp, head of Lynx creek, and there is not an idle man in the district. Recently Winning & McWilliams treated a lot of Deposit ore, which yielded $45 to the ton. Work upon the Chase and Platanca lodes, Hassayampa District, is going on …..Under date of Wickenburg, July 30, a correspondent writes that "the mills are doing as well as ever. The Vulture Mining Company have started their new pans and they work first rate. Several new buildings are going up. The health of the town is good—no sickness……The "Conquest" mine, which is situate about five miles north-west of La Paz, Yuma county, is pronounced by the miners to be one of the richest and best developed mines in Arizona. Its owner, Manuel Ravena, has spent a great deal of money in having it thoroughly prospected, and he is now well satisfied of its richness and permanency. "To give an idea of the amount of labor that has been performed on this mine during the last four years, says our cotemporary, it is necessary to state the fact that eighteen shafts of from ten to seventy feet in depth, each, have been sunk upon the lode, at different points inside the length of the claim, 1200 feet, and in all of those shafts the lode has been struck, thus proving it to be a true vein. The width of the vein averages from 3 to 21 feet; the rock is decomposed and is very rich, in free, fine gold. A mill will soon be erected, to work the ore from this ledge, and we learn that Mr. Ravena has disposed of his business at La Paz and leased his house, so as to be able to devote his whole attention to the working of the 'Conquest.'"

South Africa.

Before the British Science Association, during its recent session, Dr. R. J. Mann, Superintendent of Education in Natal, and Special Superintendent of the Natal District, read a paper on "The Gold Fields of South Africa." It is stated that in the year 1864 there arrived in the colony a young German, who stated that his business was to take a little walk through the middle of the continent of Africa. He had, he said, been for some time pondering on this project, and had spent some months in London about the British Museum, Kew-gardens, the Zoological-gardens, and Crystal Palace, keeping his eye constantly on his main object. He had, however, no money to pursue it. He turned the flank of this difficulty by making his way to Algoa Bay as supercargo of a vessel, whence he obtained a passage to Natal, where he was introduced by a German missionary to a merchant, who employed him as a teacher, in which capacity Charles Manch—such was the name of the adventurous traveller—acted during a journey to the Orange River. In this way he reached Londenbury in the Transvaal, and explored the country in various directions. During these excursions, he fell in with a noted elephant hunter of the region, an Englishman named Hartley, and accompanied him in one of his excursions beyond the Limpopo River. He obtained much information as to the district he desired to reach from another hunter, Mr. Charles Hornsen. Mr. Hartley and his companion followed the track of the elephant through the high region which formed the crest of the water-shed separating the Limpopo and Zambesi rivers, including a stretch of 250 miles. On the 27th July, 1866, Mr. Hartley told his companion that in following a wounded elephant he had come to some holes artificially made in a mass of quartz rock, where it was obvious there had been some process of mining by natives in past times. Herr Manch armed himself with a hammer and started in the direction indicated. Having reached the place he saw a bright vein of white quartz crossing the surface of the ground, about four feet thick; he also found a pit about ten feet in diameter, containing fragments of quartz, coal ashes, and pieces of broken clay pipes, and which was obviously an old smelting place. There were in the vicinity several similar pits. From these holes he collected fragments of bright lead ore, containing silver, and also pieces of quartz rock impregnated with gold. He rejoined Mr. Hartley, with whom he returned in a few days afterwards. Extending their investigations, they crossed a large vein of quartz, and after twenty minutes walk came to a rivulet with sand mingled with particles of gold, and near which were several pits spread over a space of two miles. To the northeast there extended a vast plain of yellowish white limestone rock, without a tree or a bush. The exploration was extended towards the Zambesi to a point not more than forty German miles from the Portuguese settlement of Tese, on the Zambesi river. A second track, rich in gold, was found here. The explorers brought back with them fragments of very fine gold of the value of $200, which was extracted from one choice fragment. The search was limited, from the fact that travellers invariably have a native attendant attached to them by the Chief, Mozilikatze, who has forbidden all research of this character. The collection of minerals had consequently to be made by stealth, during the accidental absence of the spy. The distance from the southern part of the Transvaal republic to Mosilikatze's kraal was altogether 224 hours of actual traveling by the ox wagon. The district in which indications of gold were observed stretches about 200 miles from north to south, and apparently through a wide distance from east to west. Two distinct fields were specially spoken of as being unquestionably rich in the precious metal. The richest spot observed was about two miles north of the Umzmerve river, the furthest point of the journey towards the Zambesi. Herr Manch has altogether made two journeys into this district, the second extending from 25th March to 16th December, 1867. Very little had been previously known of the district, and a considerable portion of the route traversed lies through a hitherto unexplored country. Early this year Karl Manch came to Natal and communicated the information he had acquired to the Colonial government. While at Natal, he arranged to take back with him Mr. Erskine, son of the Colonial Secretary. Mr. Erskine proposes to explore the gold field, and then to pursue his progress far into the interior of the vast continent, and endeavor to make his way down to Limpopo river to its hitherto unascertained month. The value of the gold discovery, and the remarkable character of the discoverer are now amply recognized by the scientific men of Berlin, and both sympathy and aid will be afforded to him. Instruments have been already supplied to him, which will certainly prove too strong for the barbaric conservatism of Mosilikatze and his people. (Laughter and applause.)

British Columbia.

A telegram from New Westminster, dated August 19, says: "Great excitement has been created by the discovery of a large prospect on Peterson creek, situated about eighteen miles west of Barkersville. It was discovered by a man named Kennedy, and from the quantity of gold already taken out, it bids fair to rival Williams Creek in richness. News from Williams Creek is rather unfavorable, in consequence of scarcity of water. On Grouse Creek the Flume company continues paying fairly."

COPPER.

Nevada.

We have, through the Virginia City *Enterprise*, an interesting account of the new Copper Works in that city, erected for the purpose of making a working test of what is claimed to be a new process, but which in reality is only a combination of well known processes for the cheap reduction of copper ores to sulphate of copper (blue stone) and metallic copper. Our cotemporary's account runs as follows:

THE WORKS

Are situated at the corner of F street and Sutton avenue, and are under the superintendence of John Ramdohr, a gentleman well known in this city as a practical assayer and chemist. The building in which the process is being tested is about 40 feet in length by 25 in width, and is filled with tanks, furnaces, &c., and all the operations of the process are to be seen at one time in progress, from the raw ore to the pure maleable copper itself. Although the building and apparatus now in use are of a temporary character, a very considerable amount of ore may be operated upon and precisely the same results obtained as in larger works, though the ore cannot be so cheaply worked as would be the case were the works on a more extensive scale.

THE PROCESS.

The process used is in many respects new, and a patent has been applied for. The ores are reduced in the humid way, and the operation may be described as follows: The ore is first dry-crushed to a fine powder, when it is placed in a large copper tank and subjected to the action of dilute sulphuric acid, heat being applied at the bottom of the tank (which stands upon a furnace), to hasten the process of dissolving the copper contained in the ore. When dissolved, the solution is drawn into a large filtering tank and from this is conducted into a precipitating tank. In case it is intended to manufacture blue stone from the solution, it is conducted to the evaporating pans, and thence, after being sufficiently reduced, it is placed in pans lined with lead for crystalization, when it is ready for sale to millmen and others who have use for the article. For the production of metallic copper the process is precisely the same as for the making of blue stone, up to the point of running the solution from the filter. To obtain metallic copper the solution is conducted from the filter to a large precipitating tank, where it is precipitated by the use of metallic iron in a state of fine division, and at once becomes metallic copper in fine grains. The metallic iron used in precipitating the copper contained in the solution is obtained in the following manner from the ore itself: The ore (from Walker River) contain but 21 per cent. of copper and a considerable amount of iron. The crushed ore, just as it comes from the batteries, is mixed with a quantity of pulverized charcoal, placed in iron tubes or cylinders and kept for a length of time at a certain heat, by which time the iron is annealed and becomes metallic, and then is ready to be used in the precipitation of the copper obtained in solution by the first process. This iron powder acts almost instantaneously, and all the copper in a tank of the solution, no matter how large the tank, may be precipitated in less than an hour. After the copper has been precipitated there remains in the solution sulphate of iron (green vitriol), and this is evaporated and crystalized in the usual way; when it is used for the manufacture of sulphuric acid, to be again employed in the process of dissolving the ore in the first operation. After the distillation of the sulphate of iron for the production of sulphuric acid there remains behind in the retorts used a substance called colcothar—a red oxide of iron sometimes used as a pigment, and for polishing glass. Thus it will be seen that the ore is made to furnish the materials by which it is worked; the only loss is about ten per cent. of sulphuric acid. To work copper ore by the new process will cost from $8 to $15 per ton, according to the price of fuel and facilities for obtaining labor, etc. We saw the whole operation of working the ore from beginning to end. A quantity of ore was digesting in dilute sulphuric acid in the first tank; the solution running from the filtering tank into the precipitating tank; the solution precipitated with the powder of metallic iron; the precipitating copper saw in process of melting in a large crucible, to be moulded into a bar, and a quantity of both the blue and green vitriol that had been manufactured.

CONTEMPLATED OPERATIONS.

Parties who have abundant means to erect works upon a large scale are about to become interested in the business, and an immense establishment will soon be erected at some point in the State convenient to copper veins, water and wood; indeed, it is the intention to erect such works at several points, as at Empire City, on Walker River and on the Truckee River, as near as possible to the Peavine copper mines. The parties above mentioned are perfectly satisfied with the working of the process so far as the production of copper and blue stone is concerned, and only wish to ascertain the precise cost of reducing the ores. The operations we saw yesterday were for their satisfaction and edification.

IMPORTANCE OF OUR COPPER MINES.

We have in this State hundreds of veins of copper of wonderful richness and of great extent, and if the new process is what it appears to be and what is claimed for it, we will not only be able to manufacture all the blue stone needed in the country, (a big item), but to export an immense amount of metallic copper. Some of the parties concerned in the experiments now being made at the works we have now described are so sanguine of the success of the new process, that they assert that before this time next year several large reduction works will be in operation, and there will be shipped from this State over 430,000 pounds of copper bars. We hope all this may prove true.

Michigan.

Relative to the new discovery in the Hancock mine we learn as follows from the editor of the Portage Lake *Gazette*, who made a personal examination of the mine for the purpose of ascertaining the truth of the many reports circulated concerning it. He says:—"This present discovery was made in the south end of the first level, just beyond the mammoth "Mud Vein," where the drift followed along under a very smooth, beautifully defined hanging wall. From some indications near the end, the captains were induced to break through this wall, and a small mass of copper was soon exposed. Others succeeded, until it was plain quite a nest of masses had been struck. At the time of our examination not two fathoms of ground had been broken out, and the drift was in south beyond but a few feet, with a moderate show of stamp rock on the foot side of the dividing wall. How far south this rich course may extend is not known, as this is the most southerly opening in the mine; nor is it known how far down it will extend for the same reason. From the more settled character of the ground in this vicinity, there is more reason to hope for continuity in length and depth than has existed in any previous discovery."

The *Gazette* of September 17 says of the Shelden-Columbian Mine:—The wide stope under the second level, between Bloodgood and Banker shafts, is producing some magnificent stamp-rock, besides a large per centage of barrel and small mass work. One piece we saw would weigh close on to three-quarters of a ton. This month's product will be largely made up of coarse copper….The National Mine, it continues, is looking fairly, the bulk of the mass and barrel copper, as heretofore, coming from the gash vein in the conglomerate. The August product will amount to about thirty tons. Of this amount about twelve tons will be from the stamps, the balance mass and barrel……

Water was recently brought into Pewabic by the new launder. The gate at the head was opened only five inches to furnish all the water required for use in the mill. This does not take over one-fourth the amount flowing in the stream. The trial of the stamps for ten days resulted in the new one stamping one hundred and sixty tons more than the other, or a gain of sixteen tons per day.....At the Phœnix, the Bay State vein is reported as looking well in the sixty, where the vein is six feet wide and full of copper. From the back of the fifty some good sized masses have recently been taken. The product last month was about thirty tons. This month they expect to get at least that amount.....At the Cliff the vein in the 150 north is looking first rate. The drift is now getting into No. 9 floor of amygdaloid, and sanguine hopes are entertained that at this point the vein will be found as large and rich as in the upper levels. Stoping has been commenced in the back of the 160, but as yet no vein has been taken down. The show is good in the extreme, and when the stopes from this level are in full operation a material increase in the monthly product may be expected. Product for August about 50 tons.....At Copper Falls the new hoisting engine is in position, but the boilers and connections are yet to get in. The shaft house over Spencer shaft is a strong looking structure. Spencer shaft is sunk sixty feet under the third level. The fifth level is being opened from four points; two of the drifts are yielding stamp copper, but the other two are not yet in the run of copper ground.....The Central is about as usual. The fly-wheel shaft of the stamping engine broke recently. This is particularly unfortunate, as there is a large pile of rich stamp work on hand. An idea of its quality can be formed when it is stated that from thirty-two heads working twenty-four hours they have taken out three tons of copper. A shaft has been obtained from the Copper Falls, which it is expected will be fitted up and ready for work by next Monday. .....The Ontonagon *Miner* publishes the following annual mining reports:—

OGIMA MINING CO.

Capital paid in	$209,500 00
Real estate	63,889 58
Personal estate	25,000 00
Indebtedness	13,117 30
Credits	19,514 46

Ore produced 99 tons, 1362 pounds.

Wm. A. Cobb,
Jos. M. Brown,
Jno. M. Furman,
Jos. H. Elmore, Directors.

TOLTEC CON. MINING CO.

Capital paid in	$386.647 00
Debts	13,253 38

J. C. Watson,
J. P. Farley,
H. W. Nelson,
J. B. Prince, Directors.

VICTORIA MINING CO.

Capital paid in	$141,000 00
Real estate	105,000 00
Personal estate	2,000 00
Balance to Cr., say	39,000 00

Gilbert Atwood,
A. P. Howard,
C. T. Howard,
G. W. Coffin, Directors.

CALEDONIA MINING CO.

Capital paid in	$190,000 00
Real estate	33,424 29
Personal estate	48.563 46
Indebtedness	8,442 81
Credits	503 95

J. C. McKenzie,
Francis Jenkins,
E. Ferguson, Directors.

GREAT WESTERN MINING CO.

Capital paid in	$40,000 00
Real estate	3,600 00
Personal estate	None.
Debts	None.
Credits	6,186 53

Thos. M. Howe,
C. G. Hussey,
J. M. Cooper, Directors.

NATIONAL MINING CO.

Capital paid in	$110,025 00
Real estate	25,000 00
Personal estate	75,000 00
Debts	86.422 00
Credits	117,407 17

Ingot copper, 333 tons 1371 pounds.

Thos. M. Howe,
C. G. Hussey,
J. M. Cooper, Directors.

MASS MINING CO.

Capital paid in	$109,707 00
Real estate	19,175 00
Personal estate	8,124 75
Debts	654 50
Credits	2,267 93

Thos. M. Howe,
C. G. Hussey,
J. M. Cooper, Directors.

DEVON MINING CO.

Capital paid in	$101.900 00
Real estate	$100,000 00
Personal estate	500 00
Bal. to Cr., nominal	11,500 00

Gilbert Atwood,
A. P. Howard,
C. T. Howard,
G. W. Coffin, Directors.

TREMONT MINING CO.

Capital paid in	$122,000 00
Real estate	100,000 00
Personal estate	500 00
Bal. to Cr., say	7,1000 00

Gilbert Atwood,
A. P. Howard,
C. T. Howard,
G. W. Coffin, Directors.

IRON.

Michigan.

News from the iron mines is meagre. Condensed from the Marquette *Mining Journal*, it reads as follows:—The Champion mine, in which work was suspended immediately after the great fire, is again being worked. No shipments have yet been made, though the company has about 10,000 tons in stock pile. The furnace, which blew out for repairs some time ago, is again in blast.....A meeting of the stockholders of the Michigan Iron company is to be held on the 20th day of November next, to take into consideration the question of increasing the capital stock of the company to $300,000. This action is rendered necessary, we presume, by the recent purchase of the Greenwood furnace property by the company.....Deer Lake furnace is again in blast .....At the Jackson mine a portion of the hanging wall in No. 5, fell recently, almost completely filling the deep cut with broken rock. It will be a three weeks' job to clear away the debris. .....The following is a statement of shipments from the New England mine since it has been opened:

	Gross Tons.
1866	3,150
1867	9,075
1868 (up to Sept. 5)	5,711
Total	17,936

Earthquakes.

It is a matter of observation that everywhere around the coast line of every continent, the sea is constantly at work warring against the land, crumbling away its edges, grinding it to powder, and carrying the detritus away and spreading it out over its own bottom. This process is slow, but it goes on *forever*, and the result is that in time (that is, in the secular time in which geology works) the structure of continents is entirely worn away, and new ones are formed out of the ruins of the former ones. It is quite certain that our present land was formerly the bed of the sea, and that continental masses once reared their forms where now rolls "the deep and dark-blue ocean." Now, rightly estimating this mighty power of the aqueous agents which insessantly labor to reduce the inequalities of the earth's surface to a level, it is easy to see that, if they went on unopposed, they would at length "clear away and spread over the bed of the ocean all our present existing continents and islands," and, indeed, they have been at work long enough to have, if unopposed, produced this very result.

It is the earthquake and the volcano which place themselves in opposition to this destructive tendency; so that we may regard the igneous agents as in constant antagonism to the aqueous agents—the latter laboring incessantly to obliterate the land, while the former are equally active in restoring it. What are these igneous agents, and what is their source?

It is a fact perfectly assured that, in proportion as we descend into the earth, the heat augments, and the deeper we go the hotter the earth is found to be. This is proven by numberless observations that have been made not only in the temperature of the air in mines, but in that of rocks and in the water issuing from them. In boring Artesian wells the water always comes up hot, and the deeper the boring the hotter the water. In the famous well in Paris, at La Grenelle, the water rises from a depth of 1,794 feet, and its temperature is 82 degrees Fahrenheit, which is almost that of the Equator. The same thing appears in natural hot springs, as for instance that of Arkansas, which is scalding hot, and shows a continuous temperature of 180 degrees. This increase is estimated at about a degree of the thermometer additional warmth for every ninety feet of additional depth; or about 58 degrees per mile. "At twenty miles depth," says a distinguished physicist, "according to this rate, the ground must be fully red hot; and at no such very great depth beyond, either the whole must be melted, or only the most infusible and intractable kinds of material, such as our fire-clays and flints, would present some degree of solidity."

Now, though geology does not say that there may not be a solid central mass in the interior of the earth—"kept solid in spite of the heat by the enormous pressure"—it does say that an immense range of terrestrial phenomena compels us to conclude that beneath the crust of the earth there is a sea of liquid fire, on which the continents and the land underneath the ocean are floating. This central fire is not only incandescent matter, but it is matter in a state of energetic elasticity, continually reacting upon the structure of the earth, and making itself felt more or less palpably—sometimes producing violent undulatory motions, and at other times breaking through the crust, and vomiting forth lava and the central fluid. The former of these commotions are styled earthquakes; the later, volcanoes; there is little doubt that they have a common origin, and, as has already been observed, it is their function to counteract the levelling effect of water, partly by heaping up new matter in certain localities, and partly by deepening one portion, and forcing out another, of the earth's envelope. It remains to see in what manner this is done.

In a paper as profound in its views as it is luminous in its statement, Sir John Herschel has indicated the philosophy of these divulsions and upheavals, and we cannot do better here than opitomize his statement. The land, as has been seen, is perpetually wearing down, and the materials are being carried out to sea—thinning toward the land, and thickening over all the bed of the sea. What must happen? If the continents be lightened, they will rise; if the bed of the sea receive additional weight it will sink. It is impossible but that this increase of pressure in some places, and relief in others, must be very unequal in their bearings; so that at some place or other this solid floating crust must be brought into a state of strain, and if there be a weak or a soft place, a crack will at last take place. When this happens, down goes the land on the heavy side, and up on the light side. This is exactly what happens in earthquakes. We should naturally expect that such cracks and outbreaks would occur along those lines where the relief of pressure is the greatest, and also its increase on the seaside; that is to say, along or in the neighborhood of the sea-coast, where the destruction of the land is going on with most activity. Now, it is a remarkable fact in the history of volcanoes, that there is hardly an instance of any *active* volcano at any considerable distance from the sea-coast; while it is to be observed that the favorite sporting places of earthquakes are the regions covered by the great chains of volcanic cones.

That earthquakes operate to raise the land-masses is not a mere matter of speculation, but a fact of repeated observation. In 1822, in a single night, (Nov. 19,) the whole coast line of Chili, for a hundred miles about Valparaiso, with the mighty chain of the Andes, was hoisted at one shock from two to seven feet above its former level, leaving the beach *below* the old low-water mark high and dry. In 1819, in an earthquake in India, in the District of Cutch, bordering on the Indus, a tract of country more than fifty miles long and sixteen broad, was suddenly raised ten feet above its former level. And again, in 1538, in the convulsion which threw up the Monte Nuovo, the whole coast of Pozzuoli, near Naples, was raised twenty feet above its former level, and remains so permanently upheaved to this day. There are hundreds of the like instances on record, and no doubt when we come to get full scientific accounts of the late convulsion, it will be found that parts of the coast of South America have been raised above their former level.

Such is the way in which earthquakes do their work, and they are *always* at work. According to Humboldt, there is not a day in which the earth is not shaken by these commotions; so that the state of perpetual movement is the normal condition of the surface of our globe, and if we had apparatus sufficiently sensitive we should doubtless detect this constant movement. And, indeed, already astronomers complain that their instruments betray, by inexplicable perturbations, the instability of the crust that supports them.

It is true, that over by far the larger part of the globe these agitations are either slight or else absolutely imperceptible, so that we consider the greater portion of the earth as motionless; but there are other countries that have again and again been shaken by violent and destructive convulsions. These are the true regions of the earthquake and volcano, and modern physical geography has made such progress as to mark off a certain number of extensive districts or zones in which the shocks are simultaneous. Among these may be mentioned the Atlantic District, that of Central Asia and that of the Pacific Ocean.

Of these great regions the zone embracing the Andes of South America is one of the best defined, and it is that divulsed by the late earthquake waves. It extends from the southward of Chili to the northward of Quito, from about 43° south to about 2° north of the equator. In this region, comprehending forty-five degrees of latitude, or above 3,000 miles, there is a great chain of volcanic cones, arranged in a linear direction. In Quito, Peru and Chili there are twenty-six of these in activity, and nearly as many more extinct ones, any one of which, as geologists tell us, may at any moment break out afresh. In this whole region earthquakes of more or less violence are of very frequent occurrence. Boussingault declares his belief that if a full register had been kept of all the convulsions experienced in this zone, it would be found that the trembling of the earth had been incessant. Nor is the frequency of these South American earthquakes more extraordinary than the duration of the shocks. Humboldt relates that on one occasion, when travelling on mule back with his companion, Bonpland, they were obliged to dismount in a dense forest and throw themselves on the ground, the earth being shaken uninterruptedly for upward of a quarter of an hour with such violence that they could not keep their legs.

It is much to be hoped for the sake of science that we may have full and accurate data respecting the late South American earthquakes. In general, there is a great deficiency of reliable information regarding such phenomena. There are very few that would have the nerve and mental balance to imitate the *savan* Boussingault, who, in one of the South American earthquakes in 1827, sat tranquilly, marine chronometer in hand, braving the shock and calmly counting the regular pulsations of the subterranean thunder, which lasted six minutes. And this paucity of satisfactory observations is the more to be regretted from the fact that, as Lyell states, "in every instance where a spirit of scientific inquiry has animated the eye-witnesses of these great events, facts calculated to throw light on former modifications of the earth's structure are recorded."

The South American earthquake waves seem to have extended over the whole zone already indicated, though with varying degrees of violence—varying, as we may conjecture, according to the physical constitution of the crust. So far as information has come to hand, the shocks appear to have been confined to the region between the Andes and the Pacific, and not to have swept to the eastward of the great mountain range; but the pulsations were conveyed along the bed of the ocean, (for it seems that earthquake waves are propagated from place to place precisely in the same manner and according to the same mechanical laws as a wave along the sea or the waves of sound along the air;) and made themselves felt at far distant points. This is an observed and well-known peculiarity of great earthquake shocks. "It has been computed," says Humboldt, "that during the earthquake of Lisbon on Nov. 1, 1755, a portion of the earth's surface four times greater than the extent of Europe was simultaneously shaken. The shock was felt in the Alps and on the coast of Sweden, in small inland lakes on the shores of the Baltic, in Thuringia and in the flat country north of Germany. The thermal springs of Toplitz dried up and again returned, inundating everything with water discolored by ochre. In the islands of Antigua, Barbados and Martinez in the West Indies, where the tide usually rises little more than two feet, it suddenly rose above twenty feet, the water being discolored and of an inky blackness. The movement was also sensible in the great lakes of Canada and on the coast of Massachusetts." In like manner, the undulations of the same shock which last month convulsed the coast of Peru manifested themselves in extraordinary tidal phenomena along the shores of California, four thousand miles distant, and in the waters that wash the far-away Sandwich Islands. These are facts of the profoundest scientific interest, but it would be hazardous at present to attempt deductions from data yet imperfect.

Perhaps there might be a field for inquiry opened up in reference to possible methods of mitigating the horribly destructive effects of earth-shocks, especially in great cities which, when overtaken by energetic convulsions, are apt to be whelmed in ruin. It is among the functions of science (which seeks out the secrets of nature and causes them to minister to man) to turn aside, or at least to ameliorate those ills which are incidental to the working of the machinery of our habitable globe. Babinet notices that in general, gothic constructions stand earthquakes better than do Greek edifices. It has also been observed in South America that fragile wooden houses with straw roofs resist by their very weakness shocks which topple down massive stone structures. As an illustration of the quick-wittedness of we North Americans it may be mentioned that, in the violent earthquake shock which happened at New-Madrid in 1812, the people, though wholly inexperienced in such perturbations, remarked that the chasms in the earth were in a direction from south-west to north-east, and they accordingly felled the tallest trees, and laying them at right angles to the chasms, stationed themselves upon them. "By this invention," says a geologist, "when chasms opened more than once under these trees, several persons were prevented from being swallowed up." One can hardly doubt that if Providence had afflicted with earthquakes the land of the Yankees, they would have found out a way to curb their disastrous effects. It is possible that iron architecture, affording as it does means for securing the most intimate cohesion between the roof and sides of a building, and enabling us to raise structures that will topple a great deal without divulsion, may yet be the solution of the problem; but this is merely a suggestion for the consideration of experts.—*N. Y. Times.*

Another New Powder.

A San Francisco paper makes mention of a new explosive compound, called by the inventor, who is a resident of that city, "Hafenegger Powder." It is thought, from experiments which have been made, that there is scarcely a question but that it will prove a valuable explosive for mining and other purposes. One-eighth of an ounce of the Hafenegger powder was recently placed under a ten pound cannon ball, which was set upon a piece of cast iron, into which a slight indentation had been made to receive the powder, and upon being lighted with a fuse, blew the ball some fifteen feet into the air. Seven ounces of ordinary gunpowder were used in the same manner, and its explosion simply rolled the ball a few inches from the position in which it had been placed. Two ounces of the new powder, put in a ball with a hole running through the centre, and this set upon a piece of quarter inch boiler iron, fired in the open air, tore a hole through the iron large enough to admit a man's foot and sent the ball a considerable distance. Other interesting experiments were made, all of which fully came up to the expectations of the inventor and of parties interested.

MARKET REVIEW.

FRIDAY EVENING, Sept. 25, 1868.

Gold and Silver Stocks.—Colorado and Nevada stocks are improving slowly. Smith & Parmelee is now ranging towards $5; and Manhattan Silver $115. Twin River continues unchanged, being reported held at $25, but probably this is more than could be realized upon it in the market at this time. Combination steadily declined during the week, and to-day touched $4 with holders asking $8, against $10 last week. Consolidated Gregory of Colorado is one of the rising and most active stocks. Sales were reported on Wednesday at $4 40, a considerable advance. Prices at the board are thus quoted to-day:

	Bid.	Asked.		Bid.	Asked.
Alameda Silver	— —	— 40	Holman	— 2	— 6
American Flag	— —	— 50	Hope Gold	— —	— 15
Benton Gold	— 25	— 30	Kipp & Buell Gold	— —	— 15
Bates & Baxter Gold	— —	— 50	La Crosse Gold	— 22	30
Black Hawk G	— —	5 00	Liberty Gold	— —	— 5
Bobtail Gold	— —	1 25	Manhattan Silver	115 00	— —
Burroughs G	— —	— 10	Midas Silver	— 25	— —
Combination Silver	4 00	8 00	Montana Gold	— 57	— 19
Consolidated Gregory	4 30	4 35	New York	1 10	1 20
Corydon Gold	— 10	— 25	Nye Gold	— —	— 3
Edgehill Mining	— —	3 60	Owyhee Mining	15 00	— —
Grass Valley	— —	— 45	People's G. & S. of Cal	— —	— 20
Gunnell Gold	— —	— 80	Quartz Hill	— 97	1 05
H'n G. & S. bs	— —	— 85	Rocky Mountain Gold	— 7	— 14
Harmon G. & S. bs	— —	— 6	Smith & Parmelee Gold	4 90	4 95

Copper Stocks.—Prices are thus quoted here to-day:

Caledonia	10 00	Davidson	45
Canada	50	Flint Steel River	1 75
Charter Oak	1 00	Mendota	1 75

Petroleum Stocks.—National has advanced to $2 50, while many others have declined since our last report. Following are the quotations to-day:

	Bid	Ask'd.		Bid.	Askd.
Bennehoff Run		80	N. Y. and Alleghany		2 00
Brevoort		90	Pit Hole Creek		90
Buchanan Farm	55	65	Rynd Farm	20	25
Central		75	Second National		10
Clinton Oil	1 10		Sherman & B.		
Empire & Pithole			Tarr Farm		
Home			United Pet. Farms		
Manhattan			Union	5 00	
National	2 50	3 50	United States	2 05	2 10

Miscellaneous Stocks.—Wallkill Lead is quoted at 6@8; Rutland Marble, $16 25@$17 50; Cum. C'l Pf., 33; Panama R. R., 360; Mariposa Pref., 11½; Mer. Union Express, 24@24½; N. Y. Central R. R. 127; Erie Railway, 49⅛@50⅛; Erie Pref., 69; Hudson R. R., 140; Reading, 93½; N. Y. & N. H. R. R., 140@141; Mich. S. & N. I., 83¾@84; Mil. & St. P. Pref., 93¼@93⅞; Cle. & Pitts., 87¾@88; C. & N. W., 87; Chic. & N. W. Pref., 87; Cleveland & Tol., 101⅛; Chi. & R. I., 102¼; Tol., W. & W., 57½; Tol., Wab. & W. Pref., 76@78; Cleve. & Ash. R. R., 99; P., Ft. W & C., 108⅞@109; Chi. & Alton Pref., 152; Ohio & Miss., 29; D. & Sioux C. Pref., 97.

Government Stocks.—In Governments there has been a rather weaker feeling, with a disposition to realize among speculative holders. Sixty-twos are especially weak. Transactions are light, and little is being done either way on investment account. Prices are quoted:

U. S. de. 1881, coupon	114 @114⅛
U. S. 5-20s, 1862, coupon	113⅛@114
U. S. 5-20s, 1864, coupon	109¾@109⅞
U. S. 5-20s, 1865, coupon	110⅛@110⅝
U. S. 5-20s, 1865, new, coupon	108¾@108⅞
U. S. 5-20s, 1867, coupon	108⅞@109
U. S. 5-20's, 1868, coupons	109¼@109¾
U. S. 10-40s, ex. coupon	104⅜@104¾

Foreign Exchange is strong. The decline in gold has brought importers into the market, and with the present limited supply of bills it is easier to sell at quotations. The following are the current rates:

London, (prime bankers')60 days'	108⅛@108⅜
London, (prime bankers') sight	109 @109¼
London, prime commercial	108 @108⅜
Paris, (bankers') long	5.20 @5.18¾
Paris, (bankers') short	5.17½@5.16¼
Antwerp	5.22½@5.20
Swiss	5.22½@5.20
Hamburg (bankers')	35⅝@35⅞
Amsterdam (bankers')	40¾@40⅞
Frankfort (bankers')	40⅜@40¾
Bremen (bankers')	79 @79¼
Berlin (bankers)	71⅛@71¼

Gold shows considerable speculative interest. The decline to 141¾ yesterday induced a good deal of both buying and selling. The price has fluctuated between 141¾ and 142¼.

American silver is in limited request at 6½@7 cents below the price of gold, and Mexican dollars at 102¼@103 in gold.

The following will show the Exports of Specie from the port of New York for the week ending Sept. 19th, 1868:

Total for the week	$646,890
Previously reported	65,352,056
Total since Jan. 1, 1868	$65,998,946
Same time 1867	$41,494,272
Same time 1866	53,653,258
Same time 1865	21,727,792
Same time 1864	$34,675,197
Same time 1863	31,105,416
Same time 1862	41,846,247

There is no change in the prevailing rates of interest for money. Capital is abundant at 3@5 per cent. for call loans; the higher being an exceptional figure upon miscellaneous collaterals. The range of discount for commercial paper at short date is 6@7 per cent. per annum.

Copper is firm with a steady demand for consumption Sales for the week foot up from 800,000 to 900,000 lbs., at 23½c. for Baltimore; 23¼@23¾ for Lake Superior. For November and December delivery, ¼c. more has been paid.

The English market is unchanged at £67, for Chili bars.

Tin is quiet with sales of 1,000 slabs Straits, 24c., 30 days; Banca is quoted 26¾c.; English, 24s.

Spelter 6¼c. gold, for Silesian, with sales of 75 to 100 tons, part to arrive.

Lead is in steady demand for consumption. Sales for the week 5 to 600 tons at 6¼@6½c. gold, for ordinary foreign.

Petroleum is quiet and firm at 16½@17c. for Crude, and 32c. for refined, in bond.

Receipts for the week ending Sept. 22	pkgs.	10,300
Exports for the week	galls.	1,117,591
Do. from January 1	do.	39,578,711
Do same time last year	do	21,455,547

The following is the quantity exported from other ports, Jan. 1 to Sept. 19:

		1868.	1867.
From Boston	galls.	1,854,397	1,525,268
	Philadelphia	27,300,053	20,650,337
	Baltimore	2,039,605	1,192,907
	Portland	568,970	....
	Total	31,763,025	23,368,512
Total exports from the United States		72,532,600	44,890,248
Same time in 1866			43,252,859
Same time in 1865			14,717,920

THE IRON TRADE.

NEW YORK, Sept. 25, 1868.

There is but little movement in American Iron. Sales have been confined to small lots at $39@$42 for No. 1. Forge irons are quiet, with but little inquiry.

There has been a movement in Scotch Iron. Sales have been made of 600 to 700 tons. Glengarnock at $43 from yard; 400 to 500 here and to arrive at $43@$43 50. The price has advanced, stock is light, and but little on the way.

Scrap Iron is quiet—sales of 250 tons to arrive on private terms.

Old Rails remain quiet—the sales for the week are about 1,000 tons on private account.

New Rails are firmer and prices higher.

From store Bar is more quiet, but prices are steady—an invoice of English Bar was offered at previous prices. In common Sheet, we heard of a sale of 1,000 bdls. Pittsburgh at 4¾ cents for Singles and 5¼ for Doubles, delivered here, and from store 200 bdls. at 5½@5¾ cents for Singles and Doubles—Nos. 9 and 10 Russia Sheet are very scarce.

BOSTON, September 23, 1868.

There is no change to notice in Pig Iron, and the demand continues to be confined to small lots as wanted by the trade, at $43@45 per ton for Gartsherrie and other brands No. 1, and American Pig at $40@45 per ton, as to quality. In Bar Iron the sales have been in small lots, but at quiet prices. Russia Sheet Continues quiet, but is held firm at 13@14c. gold.

Imports of Pig Iron from January 1st to September 19.

	1868.	1867.
From Great Britain, tons	15,275	25,091
Coastwise Ports	10,397	6,979

PHILADELPHIA, September 22, 1868.

Pig metal is held firmly, but there is not much activity. Sales of No. 1 Foundry at $42, and No. 2 at $38 50. Scotch Pig is quiet. Manufactured Iron commands $87 50 for Bars. Blooms are neglected.

Lehigh Valley Iron Trade.

The following table shows the amount of Pig Iron transported over the Lehigh Valley Railroad for the week ending Sept. 19, 1868, and for the season to that date.

From	Week. Tons.	Season Tons.
Carbon Iron Co.	160	6,000
Lehigh Valley Iron Co.	225	8,225
Thomas Iron Co.	355	20 800
Lehigh Crane Iron Co.	820	19,005
Allentown Iron Co.	950	15,735
Robert Iron Co.	200	6,990
Glendon Iron Co.	370	17,070
Other shippers	200	15,107
Total	3,290	103,932

Lake Superior Iron Trade.

Receipts of Ore and Pig Iron at Marquette, up to and including Saturday, Sept. 12, 1868, by the Marquette & Ontonagon Railroad.

IRON ORE.	Previously reported.	For past week.	Total.
Lake Superior Iron Co.	70,960	3,781	74.741
Cleveland Iron Co.	25 711	1,555	27.266
Marquette Iron Co.	7,123	152	7,275
Washington Iron Co.	20,102	1,219	21.321
New England Iron Co.	5,711	391	6,102
Edwards Mine	11,016	428	11,444
Pittsburg & Lake A. Iron Co.	19,443	1,085	20,528
Ore to Local Furnaces	16,631	1,138	17,769
Total Iron Ore, tons	176,679	9,749	186,446
PIG IRON.			
Morgan Iron Co.	5,736	162	5,898
Greenwood Iron Co.	419	45	464
Bancroft Iron Co.	2 544	135	2,679
Collins Iron Co.	3,148	93	3,241
Michigan Iron Co.	3,485	....	3,485
Total Pig Iron, tons	15,332	435	15,767
Total ore and pig iron, tons	192,029	10,184	202.213

Statistics of Iron and Steel Exported from Great Britain to the United States.

The following statement exhibits the quantities of the various kinds of Iron and Steel exported from Great Britain to the United States, during the first seven months of the years 1867 and 1868, in tons of 2,000 lbs.:

	1867. Tons.	1868. Tons.
Iron, Pig and Puddled	74,619	45,523
" Bar, Angle, Bolt and Rod	28,672	24,251
" Railroad of all sorts	126,180	185,338
" Hoops, Sheets, and Boiler Plates	20,168	8,887
" Wrought of all sorts	4,886	2,474
" Wire	824	358
Total	255,349	266,831
Steel, unwrought	13,129	9,434

Market Prices.

NEW YORK, Sept. 18, 1868.

DUTY.—Bars, 1 to 1¼c. per lb.; railroad, 60c. per 100 lbs.; boiler and plate, 1½c. per lb.; sheet, band, hoop and scroll, 1¼ to 1¾c. per lb.; pig, $9 per ton; polished sheet, 3c. per lb. Payable in gold.

Am. pig, fy. No. 1, best.	$39 00	@42 00	Light rls for mines &c., at works	80 00	— —
" " 2x, fdry,	36 00	39 00	Do. delivered here	83 50	— —
" Grey Forge,	32 00	35 00	STORE PRICES.		
White and Mottled.	30 00	31 00			
Pure white, for Cal. mar.	31 00	— —	Bar, Swedes, ord'y sizes	— —	155 00
Scotch Pig, No. 1. best bd	43 50	45 00	Bar, Eng. and Am., rl'd	— —	100 00
" " " outside.	43 00	— —	Bar, Eng. & Am., com.	— —	90 00
Scrap Iron, ex ship.	45 00	— —	Scroll	130 00	175 00
Old rails	45 00	48 00	Ovals and half round	125 00@155 00	
R.R. Iron, For., fm Stock gold	51 50	52 50	Band	130 00	— —
R.R. Iron, For., to imp.	50 00	— —	Horse Shoe	130 00	— —
" " Amer, at wks. currency	77 00	— —	Rods, ⅜@3-16 inch	105 00	165 00
R.R. Iron, Am., deliv'd.	80 00	— —	Hoop	135 00	140 00
Solid Steel rls. For, gd.	110 —	— —	Nail Rod, per lb.	9¼	10½
Stl rails of any pattern at works, currency	80 00	— —	Sheet, Russ. as'd. Nos. (gold)	13	14
Stl rls of any pat. d. here.	83 50	— —	Sh'et, s'gle, D. & T. com	5	—
			Rails, Eng., gold, ton	51 00	52 00
			Rails, American	80 00	81 00

STEEL.

English, cast (2d and 1st quality) per lb	18	@23
English Spring (2d and 1st quality)	10	@12¾
English Blister (2d and 1st quality)	11½	20
English Machinery	13½	16
English German (2d and 1st quality)	14	16
American Blister, "Black Diamond,"	10¾	16
American, Cast, Tool " "	19	—
American, Spring " "	10	13
American, Machinery " "	—	13
American German " "	10	13

From the Pittsburgh Commercial.

PITTSBURGH, September 16, 1868.

Whilst the tone of the market is buoyant for raw irons generally, standard forge descriptions of medium grades, such as form the principal basis of merchant bars and nails, are in active request.

Notwithstanding the furnaces of the Mahoning and Shenango districts have generally resumed operations, the demand keeps apace with the production. In some instances sales have been made in advance of production, but furnacemen generally decline contracting sales in advance.

In charcoal irons there is a fairly active demand for certain fine grades of forge descriptions, whilst foundry kinds continue comparatively dull.

There is increased firmness on the part of holders of blooms. Stocks of the better grades are light, and whilst common and inferior grades can be purchased at former rates, choice makes are held at $100 per ton, 4 months.

The sales were: Anthracite, 1,300 tons; charcoal, smelted, 1,020 tons; bituminous coal, smelted from L. S. ore, 2,030 tons. Total, 4,360 tons.

ANTHRACITE.

150 tons Chickie's Forge	$40 00	—4 mos.
20 tons Foundry	40 00	—4 mos.
50 tons Close Gray	38 00	—4 mos.
50 tons Mottled	37 00	—4 mos.
20 tons Neutral	36 00	—4 mos.
200 tons Chickie's No. 3, Forge	38 00	—30 dys
200 tons Youghiogheny, No. 3	36 50	—cash,
200 tons No. 3, Neutral Forge, to arrive	39 00	—cash.
100 tons " " "	40 00	—4 mos
20 tons No. 1 Foundry	43 00	—4 mos.
100 tons No. 3, Neutral Forge	40 00	—4 mos.
100 tons " " "	40 00	—4 mos.
100 tons No. 3 Close Gray	38 00	—4 mos.

CHARCOAL SMELTED.

50 tons No. 1 Fouddry, H. R.	45 00	—4 mos.
50 tons No. 1 Foundry, H. R.	44 50	—4 mos.
25 tons Extra Forge	45 00	—4 mos.
320 tons No. 1 Foundry	43 00	—6 mos.
20 tons No. 1 Foundry	44 00	—4 mos.
400 tons No. 2 Missouri Forge	50 00	—4 mos.
175 tons No. 2 Lake Superior Charcoal, common brand	44 50	—4 mos.
BLOOMS.		
10 tons Juniata	90 00	—4 mos.
30 tons "	90 00	—cash.

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORES.

500 tons Open Gray, deliverable at furnace, terms private, but said to have been equal here to	40 00	—4 mos.
400 tons Open Gray, deliverable at furnace on the Mahoning	38 00	—4 mos.
250 tons Medium Gray Forge, deliverable at furnace	37 50	—4 mos.
100 tons Medium Gray Forge, to arrive	39 00	—4 mos.
100 tons Pure White, a favorite brand, from yard	38 00	—4 mos.
100 tons Medium Gray	39 00	—4 mos.
150 tons Open Gray, a choice brand	40 00	—4 mos.
100 tons " "	40 00	—5 mos.
100 tons Medium Gray Forge to arrive	39 00	—4 mos.
50 tons do. White and Mottled, to arrive	38 00	—4 mos.
180 tons Medium Gray, to arrive	39 00	—4 mos.

The demand for iron and nails during the past week has been very active, and prices are very firm at the card rates. Manufacturers are not disposed to make sales for future delivery at the present prices, which afford them no margin whatever, but are supplying the present wants of their trade, hoping that as the fall advances, better prices may be realized. The mills are generally running full time.

Reports from the West confirm our opinion that we shall have a good healthy business this fall.

The stage of water in the Ohio river has enabled the St. Louis merchants to receive good shipments from this city during the week.

CINCINNATI, Sept. 21, 1868.

PIG.—There is an improved demand, with a firmer feeling in the market. A disposition to buy more freely is evinced by manufacturers.

	Per Ton.	
Hanging rock H. B. mill	$36	$38—90 days.
" " H. B. foundry	38	40—90 days.
" " Cold Blast	53	—90 days.
" " Car Wheel	55	60—90 days.
Tennessee Cold Blast	40	42—90 days.
Missouri	45	47—90 days.
Jackson (stonecoal) foundry	38	39—90 days.
Blooms	95	100—60 days.

MANUFACTURED.—Prices have advanced to figures given below:

	B.		C.	C.
Flat bar	4	4½	5½	5¾
Horseshoe iron	5½	6	6¾	7½
Heavy band	4¾	5	6	6½
Round and square	4	8	5¼	9½
Saddle-tree	5½	6	6½	7¼
Hoop and light band	5¾	9¾	6½	11
Oval iron	4½	5½	5¾	6½
Half oval and half round	4¾	5½	6	6¾
Angle iron	5½	6½	6¾	7¾
T and hollow rail iron	6		7½	
Saw-mill track	6		7¾	
Sheet iron 10 to 17	5½		8½	
Sheet iron, 27	6¾		9¼	
Boiler plate, 3-16 to 5-16			7	

IRONTON, Ohio, Sept. 17, 1868.

Says the *Register*: Metal seems a shade higher than at last reports. Firmness characterizes the prices of all brands. Orders are becoming plentiful. Some of our heaviest furnace men have sold ahead of their production. During the past week the shipments and receipts nearly balanced—each being about 500 tons. We quote;

Mill, hot blast	$36 00@37 00
Foundry, hot blast	38 00@39 00
Cold Blast	55 00@60 00
Bituminous forge (Belton't)	37 00

Bar has advanced to 4 cents. Business shows some animation, and it is quite probable that the Ironton Rolling Mill will soon start up.

Nails are now quoted at $5 for 10d. Demand brisk.

Foundry and machine shops are both in full operation.

MILWAUKEE, Wisconsin, Sept. 21, 1868.

PIG IRON.

Arrivals continue to be very light, hardly keeping pace with the requirements of manufacturers, while they are using considerably less than was anticipated early in the season.

Buffalo Union, A. 1	$49 00
Buffalo Union, B. 1	46 00
Lake Superior No. 1 (charcoal)	43 00
Lake Superior No. 2 (charcoal)	42 00
Lake Superior No. 3 (charcoal)	43 00
Iron Ridge, No. 1 (Sweed's)	43 00
Scotch	48 00@53 00

MANUFACTURED IRON.

Flat Bar	$0 3¼@$0	4¼
Horse Shoe	5	5½
Heavy Band	4½	5¾
Hoop and light band	5	10
Eagle sheet iron	6¾	9½
Boiler sheet iron	5¾	6¾
Round and square	3¾	7¾
Oval	4½	5
American spring steel	11½	13½
Plough steel	11½	13½
American tool steel (best)		17½

SAN FRANCISCO, Cal., Aug. 29, 1868.

Says the Commercial Herald: The jobbing trade of the city is good, never beiter, yet but few invoice sales are reported. The stock of Pig Iron is excessive, with sales of 100 tons Scotch in lots at $34@35—some holders ask more. White American Iron is obtainable at $35.

Scth. & Eng. pig, ton	35	—@—	—
Am. white Pig	35	—@—	—
Ref'd bar, bad assm't, lb	2½	@3	—
" gd. assm't, lb	3¾	@4	—
Boiler, 1 to 4	4	@4½	—
Plate, 5 to 0	4	a4½	—
Sheet, 10 to 13	4½	a5	—
Sheet, 14 to 20	5	a5½	—
Sheet, 24 to 27	5	a5½	

THE COAL TRADE.

NEW YORK, Sept. 25, 1868.

The Coal trade is improving, and from the mines a heavy tonnage is going forward, yet cautious purchasers are feeling their way, seemingly in fear lest prices should fall, and they would be the losers. From Philadelphia we hear that business is good, and that the recent advance is well maintained. The report from Baltimore is that the supply is short on hand, both in anthracite and bituminous; the tone of the market is very firm and demand for all descriptions is active. On the 15th inst., the through tolls and freights from Wilkesbarre and Pittston to Baltimore were advanced 24 cents per ton. From Pottsville we learn that the demand is good, but not so brisk as it has been. No further advance has taken place, and prices are firm at last quotations. During the week ending the 19th inst., there was sent by railroad and canal from Schuylkill county the amount of 13,589,206 tons, the largest shipment ever made from that county in a single week; in the aggregate a gain of 34,081 tons over the corresponding week of last year.

Several improvements are projected which will materially benefit the Coal region. We notice a railway to connect Buffalo with the Pennsylvania coal fields to be called the Buffalo and Southern Railroad. This road will commence with the Atlantic and Great Western Railway, at or near Levant, where the Dunkirk, Warren, and Pittsburgh Railway intersects the same, and in connection therewith will make a direct route from Buffalo to Warren, Pa., distance about 76 miles.

The contract for building a road from Locust Dale to the breaker about being erected by Mr. R. B. Douty, near the town of Helfenstein, has been let to Thomas Reily. The work will be commenced immediately, and is to be completed by January, 1869. The road will connect with the Mahanoy and Broad Mountain, and will be six miles in length.

The Lehigh Valley Railroad are about adding to their road a large number of steel rails. Both tracks between Easton and Allentown will be laid with these rails in a very short time. From East Mauch Chunk to Packerton, and at several other points where the wear is greatest, they will lay these rails at once, 400 tons being already on hand for that purpose. One thousand additional tons have been ordered.

The Miners' Journal says that the report of the survey of the proposed through-traffic railroad from the Schuylkill region to New York Bay is nearly completed, and the route is found to be very favorable, there being only two points on the whole line of adverse grades to the trade, and with assistance at these two points, at an expense not exceeding three cents extra per ton transportation, a train of 120 cars, carrying 4½ tons each, can be transported over the road. The distance from Mount Carbon to the Bay is 127 miles, which is only 34 miles more than the distance to Port Richmond. The sixty-fifth Scranton sale, as will be seen by advertisement in our columns, is to come off on Wednesday, September 30, on which occasion 60,000 tons will be sold.

The following will show the amount of Coal exported from the port of New York for the week ending September 22, and for the season to that date compared with the amount shipped last year:

Exports for the week	tons.	483
Do. from January 1st	do.	46,784
Do. same time last year	do.	49 236

BOSTON, September 23, 1868.

English Cannel has been quiet, with sales at $17@19 per ton for large and small lots. In Sydney and Pictou sales at $8@8 25 per ton, and Cumberland at $8@8 50 per ton. In Anthracite steady sales at $9 for retail lots, and $8@8 50 are the nominal cargo prices. Some dealers at the close have put up the price to $10 per ton, freight having advanced materially, with engagements from Philadelphia as high as $3 40 per ton, and all Coal now arriving comes in at a largely increased cost, with the prospect of higher prices as cold weather approaches.

PHILADELPHIA, September 22, 1868.

There is rather more doing, and prices are well maintained.

The following table exhibits the amount of Coal that was passed over the various routes of transportation from the Pennsylvania Coal districts for the week ending September 19, 1868, and for the season to that date. A comparison is also made with the amounts transported the corresponding week in 1867, showing the increase or decrease, as the case may be.

	1867.		1868.		INC. OR DEC.	
	WEEK.	TOTAL.	WEEK.	TOTAL.	WEEK.	YEAR.
Phil. & Reading R. R.	81,813	2,340,805	99,891	2,087,802	i 18,078	d153,003
Schuylkill Canal	25,498	681,992	36,214	605,328	i 9,284	d 76,664
Lehigh Valley R. R.	38 956	1,493,487	52,467	1,690,859	i 13,510	i 197,372
Lehigh Canal	37,170	671,500	32,732	617,835	d 4,438	d 53,665
Scranton North	15,179	322,626	17,296	404,087	i 2,117	i 81,461
" South	22,458	925,667	21,250	783,416	d 1,208	d142,251
Penn'a Coal Co. Rail.	16,779	689,527	20,273	655,727	i 3,494	i 66,200
Penn'a Coal Canal	591	16,077	1,300	21,050	i 709	i 4,971
Del. & Hudson Canal.	45,268	985,108	51,546	1,132,984	i 6,278	147,876
Shamokin	11,108	342,944	13,387	350,719	i 2,279	7,774
Trevorton	42	30,840	1,142	19,832	i 1,099	d 11,088
Short Mountain	1,599	51,612	3,580	80,411	i 1,980	i 28,798
Lykens Valley C. Co.	2,160	47,010	1,927	62,750	d 233	i 15,740
Huntingd'n & B'd T.	4,805	169,605	7,650	186,840	i 2,845	i 17,235
W'mstown Col'y, E.	2,737	81,024	3,274	123,389	i 537	i 42,365
Wyoming South	11,145	231,436	12,719	208,982	i 1,574	d 22,454
Wyoming North	.....	13,133	4,989	40,792	.....	i 23,659
Lehigh & Susq. R.R.	12,941	365,368	25,877	623,968	i 12,936	i 258,259
Total	330,247	9,359,961	303,525	9,696,771	.....	.....
	.....	.....	330,247	9,359,961	.....	.....
Increase	.....	..... d	26,722	i 336,810	.....	.....

Schuylkill Coal Trade.

BY RAILROAD AND CANAL, FOR THE WEEK ENDING SEPT. 25, 1868.

	RAILROAD.	CANAL.
St. Clair	38,593	10,039
Port Carbon	10,016	19

Pottsville	2,740	2,035
Schuylkill Haven	31,148	20,114
Auburn	4 348	....
Port Clinton	7,076	697
Company's use	3,030	.....
Total for Week	96,951	32,895
Previously this year	2,087,802	605,328
Total	2,184,763	638,223
Same time last year	81,813	25,948
Increase	15,138	7,147

Report of Coal Transported over Lehigh Valley Railroad,

For the week ending September 19, 1868, compared with same time last year.

WHERE SHIPPED FROM.	PREV'SLY. Tons. Cwt.	TOTAL. Tons. Cwt.
WYOMING REGION.		
Franklin Coal Co.	923 16	20,525 05
Audenreid	....	50 06
Lehigh & Susq.	....	....
Germania Co.	71 00	5,825 11
Wilkesbarre Coal & Iron Co.	137 12	15,177 18
Warrior Run	....	10,710 15
Parrish & Thomas	587 09	41,986 04
New Jersey	623 02	14,665 01
Union Coal Co.	....	2,432 11
Wyoming Coal & Transportation Co.	173 19	6,827 16
Newport Coal Co.	....	....
Morris & Essex Mutual	....	1,423 11
Consumers	....	....
Everhart Coal Co.	....	....
Plymouth Co.	....	152 14
Hillman & Son	428 03	10,584 14
Barkley, Price & Co.	....	149 08
Mineral Spring	1,360 01	20,217 06
Valley Co.	....	....
Enterprise Colliery, J. H. Swoyer	922 16	25,742 00
G. B. Linderman & Co.	....	....
Washington Co.	....	....
West Pittston	....	197 05
Barclay Co.	....	....
Shawnee	220 08	6 258 07
Consumers Co.	384 09	2,985 15
Harvey & Bro.	....	2,408 00
Wyoming Valley	390 17	4,473 07
Henry Colliery	....	1,449 01
New England	421 15	7,785 08
Delaware & Hudson Co	....	114 16
Maltby Colliery	93 09	1,930 19
Gaylord Colliery	....	1,039 04
Chauncey	901 01	2,106 02
Ravine, P. & E.	....	1,062 18
Butler, H. S. M.	....	238 17
Maryland Anthracite	320 05	2,320 07
Morgan Colliery	48 14	555 19
Tompkins	79 05	590 17
Other shippers	....	29 05
Total	8,142 17	212,099 15
BEAVER MEADOW REGION.		
New York & Lehigh	1,917 16	50,876 01
Honey Brook	2,503 11	8',933 01
German Penn'a Co.	1,553 00	39,765 13
Spring Mountain	3,003 07	89,990 12
Coleraine	1,718 08	54,405 13
Beaver Meadow, D. W.	114 03	1,003 00
John Connery	....	....
Lehigh Zinc Co	....	....
Spring Brook	....	....
Other Shippers	23 14	348 07
Total	10 873 19	31',222 07
HAZLETON REGION.		
Central Coal Co	....	....
Ashburton Co.	....	433 15
Mount Pleasant	67 06	9,045 00
Hazleton	5,115 07	198,113 15
East Sugar Loaf	4,147 00	131,798 00
Mount Hall	....	219 14
Latimer, A. Pardee, jr., Bro. & Co.	1,419 06	37,456 04
Stout Co.	615 12	26,566 17
Horleigh	1,239 09	43,848 11
Ebervale Co.	1,191 10	58,919 14
Jeddo, G. B. Markle & Co.	2,009 02	103,202 04
Woodside, J. C. Co	278 09	12,222 16
Highland Coal Co.	756 10	39,848 02
Cross Creek	583 05	20,190 13
Council Ridge	1,222 18	69,702 13
Buck Mountain	1,536 09	46,203 05
Other shippers	....	....
Total	20,182 03	797,771 03
UPPER LEHIGH REGION.		
Upper Lehigh Co.	235 17	34,074 19
Other Shippers	....	....
Total Upper Lehigh Region	235 17	34,074 19
MAHANOY REGION.		
Mount Rose Co.	302 00	2,730 17
Mount Etna	....	3,450 12
Mahanoy Colliery	1,004 14	17,823 11
Coplay Colliery	1,559 01	22,831 05
Glendon	829 05	27,430 19
Primrose Colliery	1,164 01	12,709 10
E. S. Silliman	1,509 02	60,519 09
McNeal Co.	2,823 07	61,868 02
Knickerbocker	1,180 14	39,953 19
Thomas Co.	....	20,423 10
Williams & Herring	332 01	7,867 11
New Boston Co.	1,297 03	33,269 10
Shamokin Co	....	....
Caledonia M. & M.	631 03	16,999 12
Coal Mount	400 01	797 13
Other shippers	15 13	15 13
Total Mahanoy	13,032 12	328,691 13
Grand total	52,467 08	1,690,859 17
Same time last year	38,956 09	1,493,487 07
Increase	13,510 19	197,372 10
Decrease	....	....

Report of Coal Transported over Lehigh Valley Railroad

For the week ending September 19, 1868, and previously this season, compared with same time last year :

Where shipped from.	WEEK. Tons. Cwt.	PREVIOUSLY. Tons. Cwt.	TOTAL. Tons. Cwt.
Total Mahanoy	13,032 12	315,659 01	328,691 13
Total Hazleton	29,182 03	777,589 00	767,771 03
Total U. Lehigh	235 17	33,839 02	34,074 19
Total B Meadow	10,873 19	307,348 08	318,222 07
Total Wyoming	8,142 17	203,956 18	212,099 15
Grand total	52,467 08	1,638,392 09	1,690,859 17
Same time last year	38,956 09	1,454,530 18	1,493,487 07
Increase	13,510 19	183,861 11	197,372 10
Decrease	.....	....	....
Forwarded East from M. Chunk by r'l	52,467 08	1,638,392 09	1,690,859 17
Delivered at M. C'k and on line of r'd above that point	623 04	31,277 08	31,900 12
At Penn Haven for shipm't by canal	8,322 18	103,531 09	111,854 07
At M. Chunk for shipment by canal	5,032 19	59,172 14	64,205 13
Total by rail and canal	66,446 09	1,832,374 00	1,898,820 09
Same time last year	43,779 07	1,528 360 00	1,572,139 07
Increase	22,667 02	304,014 00	326,681 02
Decrease	....	....	....

Report of Coal Shipped by Lehigh Canal,

Week ending Sept. 19, 1868, compared with same time last year :

WHERE FROM.	Week. Tons. Cwt.	Total. Tons. Cwt.
Mauch Chunk Region	14,313 19	244,572 04
Beaver Meadow Region	4,847 09	61 367 15
Mahanoy Region	95 18	1,814 07
Hazleton Region	8,521 10	180,817 16
Upper Lehigh Region	350 02	12,090 19
Wyoming Region	4,603 03	117,111 19
Total	32,732 01	617,835 00
Corresponding week last year	37,170 06	671,500 13
Increase	.....	.....
Decrease	4,438 05	53,665 13

Lehigh and Susquehanna Railroad, Week ending September 19.

WHERE FROM	WEEK. Tons. Cwt.	TOTAL. Tons. Cwt.
Total Mauch Chunk	2,255 19	15,061 15
" Hazleton Region	8,818 12	220,320 12
" Upper Lehigh	3,240 16	92,024 07
" Wyoming	11,562 12	296,561 16
Grand Total	25,877 19	623,968 10
Corresponding week last year	12,941 09	365,368 13
Increase	12,936 10	258,259 17
Decrease	.....	.....
Forwarded South from Mauch Chunk by rail	11,408 06	267,270 09
Delivered on line L. & S. R.R. above Mauch Chunk	1,196 10	52,026 15
Delivered at Coal Port for shipment by Canal	13,276 03	304,671 06
Total	25,877 19	623,968 10

Cumberland Coal Trade.

By B. & O. RAILROAD.—The shipments over the Baltimore and Ohio Railroad, for the week ending Sept. 19, were as follows :

From Cumberland and Pa. Railroad, via Cumberland.	
Consolidation Company	1,459 16
Borden	1,301 13
Midland	89 07
Allegany	12 08
From George's Creek, via. Piedmont.	
George's C. & I. Company	2,124 07
Central	3,923 15
Atlantic	754 06
Savage Mt	146 19
Franklin	737 19
Piedmont	838 10
Swanton	455 16
Potomac	1,321 00
Hampshire	2,794 03
American	736 00
Barton	484 02
Total	17,400 05
From Eckhart R. R.	
C. & I. Co.	1,441 12
Total	18,841 17

By C. & O. CANAL.—There were despatched from this port, during last week, 16,967 16 tons of Coal, forwarded by the following companies :

American	3,654 07
Borden	1,652 17
Central	3,984 16
Consolidation	2,649 12
C. & I. Co.	2,732 12
H. & B.	1,834 13
National	459 19
Total	16,967 16

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

At New York, September 25, 1868.

Schuylkill R. A., choice	$5 75@	....	Schuylkil Chestnut	4 50	....
" Ordinary	5 50	....	Lehigh W.A Lump Old Co	5 62½	....
" W. A., Lump	5 50	....	Lehigh Broken	5 57½	....
" Steamboat	5 00	....	" Egg	5 37½	....
" Broken	5 50	....	" Stove	5 62½	....
" Egg	5 60	....	" Chestnut	4 87½	....
" Stove	5 75	....	Shamokin	5 50	....

SPECIAL COALS.—DEALERS' QUOTATIONS.

Diam'd Vein R. A., Sch'kill	7 00	....	Old Co.'s W. A. Lehigh	5 38	6 50
Locust Dale W. A., "	6 50	....	Mt Pleasant	....	....
Honey Brook " Lehigh	6 25	6 50	Buck Mountain	5 38	6 38
Harleigh " "	6 50	....	Buck Ridge W. A., Sh'kin	6 75	....
Spring M'n " "	5 25	6 25	H. Hoils, E. S'klin, Lorb.	5 75	....
Sugar Creek " "	6 25	6 50	New England Red Ash	6 25	....
Ashburton " "	....	....	Wyoming	6 00	6 25

Dealers in these coals may be found in our advertising columns

At Philadelphia, September 25, 1868.

Lehigh Lump and Sm'b't.	5 50@	....	Henry Clay, Egg & Stove	@4	50
" Broken and Egg	5 50	....	Locust Mount Lump	4 25	4 50
" Stove	6 00	....	" Steamboat	4 50	4 75
" Chestnut	4 75	..	" Broken	4 50	4 75
Schuylkill R. A.	5 25	5 50	" Egg	4 50	4 75
" Chestnut	4 50	4 25	" Stove	5 00	5 25
" W. A. Lump	4 25	4 50	Lorberry Coal	5 00	....
" Broken	4 50	4 75	Shamokin	....	....
" Egg and Stove	4 50	4 75	Franklin, (Lykens Valley)	5 50	....
Schuylkill Chestnut	4 00	4 25	Broad Top	5 00	....
Hill & Harris, Egg & Stove	....	4 80			

Scranton Coal at Elizabethport, September 25, 1868.

(Corrected weekly by D. L. & W. R. R. Co.)

Lump	$4 75@	....	Egg	5 75	....
Steamer	5 25	....	Stove	5 75	....
Grate	5 50	....	Chestnut	4 75	....

Prices for Pittston Coal at Newburgh, September 25, 1868.

(Corrected weekly by Penna. Coal Co.)

Lump, per ton of 2240 lbs.	$5 10@	....	Egg " " "	5 10	....
Steamer, " " "	5 00	....	Stove " " "	5 35	....
Grate " " "	5 10	....	Chestnut " " "	4 55	....
Pea " " "	3 25	....			

70 cents additional to New York.

Lackawanna at Rondout, September 25, 1868.

Lump	$4 75@	....	Egg	$5 25@	....
Steamer	5 10@	....	Stove	5 50	....
Grate	5 20@	....	Chestnut	4 50	....

65 cents additional to New York.

Lehigh Coal at Elizabethport, September 25, 1868.

Lump	6 25@	....	Chestnut	5 00	....
Steamboat and Broken	5 75	....	Stove	6 25	....
Egg	5 75	....			

Wilkesbarre Coal at Hoboken, September 25, 1868.

(Corrected by Wilkesbarre Coal & Iron Co.)

Lump	$5 50@	....	Egg	5 75@	....
Steamer	5 75	....	Stove	6 00	....
Broken	5 75	....	Chestnut	5 25	....

At Baltimore, September 25, 1868.

Wholesale prices to trade.		Trevorton R. A.	$5 50@$5 75
Wilkesbarre by cargo or car load	$6 10@6 25	By retail, per ton of 2,240 lbs., delivered	7 25@ 7 75
Pittston and Plymouth	$6 00@ 6 25	Georges C'k and Cumberland f. o. b. at Locust Point for shipping	@ 4 75
Shamokin R., or W. Ash	5 75@ 6 15		
Lykens Valley R. A	5 90@ 6 10		

At Havre de Grace, Md.

Cargo prices for shipment *south* of Patapsco river, (drawback allowed of 21c,)		Shamokin R., or W. Ash	$6 00@
		Lykens Valley R. A.	6 25@
Wilkesbarre and Pittston W. Ash	$6 00@	Trevorton R. A.	5 65@6 00

At Georgetown, D. C. and Alexandria, Va.

George's Creek and Cumberland f. o. b. $ @ 4 55

An advance of twenty cents per ton has recently been allowed boatmen on canal freights from Cumberland, and the price of coal correspondingly advanced

Prices of Gas Coals.

September 25, 1868.

PROVINCIAL. Duty, $1 25	Coarse. Gold.	Slack. Gold.	AMERICAN	Coarse. Currency.	Slack. Currency.
Block House	$1 75	$ 75	Westmoreland Co.	$8 50	$8 00
Gowrie	1 75	75	Despard Coal Co.	8 25	8 00
Lingan	1 75	75	Penn	8 50	8 00
Sydney	2 13¾	71¼	Newburgh Orrel Gas	8 50	8 00
Pictou	2 13¾	1 18¾	Delivered in New York.		
Little Glace Bay	1 75	1 00			
Caledonia	1 60	75			

Prices of Foreign Coals.

Duty $1.25 per ton.

Corrected weekly by PARMELEE BROS., 32 Pine Street, N. Y.

Liverpool Gas Caking	$ 9 50	Liverpool House Cannel	18 00@19 00
" " Cannel	14 00	" " Orrel	16 00@18 00

Per ton 2240 lbs., Ex. ship.

PRICES FROM YARD

Liverpool House Orrel, scr'd	$18@20	Liv'p'l House Can'l, scr'd	22 00@— —

per ton 2000 lbs. delivered.

Coal Freights.

(Corrected Weekly.)

Rates of Freight from Newburgh

RIVER.		EASTERN.	
On "Pittston" Coal, by boats and barges of the Pennsylvania Coal Company, per ton of 2,240 lbs.		Stamford	$1 25
Troy and West Troy	$ 55	Norwalk	1 25
Albany and Greenbush	50	Bridgeport	1 25
Coeymans	45	New Haven	1 25
Coxsackie and Stuyvesant	40	New London	1 40
Hudson & Catskill	35	Norwich	1 50
Saugerties and Barrytown	35	Mystic	1 45
Rhinebeck and Rondout	30	Stonington	1 45
Poughkeepsie and New Paltz Land.	25	Sag Harbor	1 45
Fishkill Landing	20	Bristol	1 55
Cold Spring and West Point	30	Newport	1 55
Peekskill	40	Providence	1 60
Haverstraw	45	Dighton	1 60
Sing Sing and Nyack	60	Warren	1 60
Tarrytown and Piermont	50	Pawtucket	1 75
Yonkers	55	New Bedford	1 90
The Coal must be discharged with all reasonable dispatch, at the expense of the consignee, who shall also pay wharfage on the boat. Boatmen will tend guy while unloading.		Boston	2 15
		East Cambridge	2 25
		Salem	2 15
		Newburyport	2 25
		Portsmouth	2 25
		Portland	2 00

Freights on Coal Sea-borne from Port Richmond, Philadelphia.

Sept. 16, 1868.—From Philadelphia & Reading Railroad Wharves, Phila., to

Boston	2 50	3 25	New York	1 25@	$1 35
Providence	2 00	2 30	Stonington	2 00	— —
Lynn	2 75	3 20	Greenport	2 25	— —
Portland	2 50	— —	Troy	1 40	— —
Chelsea	2 75	— —	Charleston	1 75	— —
Fall River	2 20	— —	Bath	2 50	2 75
New Bedford	2 25	— —	Gardner	3 00	— —
Roxbury	3 05	3 25	Saco	3 15	— —
Salem	2 75	3 15	Chatham	3 50	— —
Newport	2 00	2 30	Cambridgeport	2 75	3 00
Pawtucket	2 15	— —	Danversport	2 75	3 00
East Cambridge	3 00	3 25	Warren	2 25	— —
Newberryport	2 75	2 95	Branford	1 90	— —
Norwalk	1 75	— —	New London	2 00	— —
Williamsburg	1 30	— —	New Haven	1 80	— —
Belfast	3 00	— —	New Suffolk	2 15	— —
Portsmouth	2 65	3 25	Staten Island	1 30	— —
Amesbury	3 50	— —	Jersey City..c	1 30	— —
Dighton	2 50	— —	Port Monmouth..c.	1 45	— —
Norwich	2 00	— —			

From Elizabethport and Port Johnston.

Albany	$ 85@	— —	New London	$1 15	— —
Boston	2 00	— —	Newport	1 40	— —
Bridgeport	1 00	— —	New York	60	— —
Fall River	1 45	— —	Norwalk	1 00	— —
Hartford	1 50	— —	Norwich	1 35	— —
Hudson	1 00	— —	Pawtucket and towing	1 60	— —
Wareham	1 55	— —	Portland	1 90	— —
Middletown	1 25	— —	Portsmouth	2 10	— —
New Bedford	1 50	— —	Providence	1 40	— —
Newburyport	2 15	— —	Salem	1 75	— —
New Haven	1 00	— —	Augusta	2 25	— —

Rates of Transportation to Tide Water.

[BY RAILROAD.]

To Port Richmond.—(Philadelphia.)

Philadelphia and Reading R. R. from Schuylkill Haven $2 00

The following are the drawbacks allowed on all coal shipped East of New Brunswick and South of Cape Henry, until further notice :

	Drawback.	Freight.	Nett.
Lump	85	$2 00	$1 15
Steamboat	85	2 00	1 15
Broken	50	2 00	1 50
Egg	50	2 00	1 50
Stove	25	2 00	1 75
Chestnut	40	2 00	1 60

From Port Carbon, 8 cents per ton more.

To Elizabethport.

L. V. Railroad from Mauch Chunk to Easton	$ 81
C. R. R., N. J., Easton to Elizabethport	1 22
	2 03
Shipping Expenses at Elizabethport	25
Total	2 28

To Port Johnson.

L. V. R.R.	$ 81
C. R. R. of N. J.	1 22
Shipping Expenses	25
Total	2 35

To Hoboken.

L. V. R.R.	81
Morris & Essex R.R.	1 29
Shipping Expenses	25
Total	2 35

[BY CANAL.]

To Port Richmond.

From Schuylkill Haven to Port Richmond	$1 00
Freights and tolls by Raritan Canal	1 90
	2 90
Drawback	30
Total	2 60

To New York.

From Mauch Chunk to New Brunswick, by Lehigh, Del. Div. and Del. & Raritan Canal	$ 90
Freights through	1 25
Towage	20
	2 35

To New York via Morris Canal.

Lehigh Canal	$ 34
Morris "	40
Towage	10
Freight	1 55
Total	2 39

Expenses from Mauch Chunk to Jersey City for Re-shipment.

Lehigh tolls (net)	$ 34
Morris "	34
Freight	1 50
Re shipping	30
Total	2 48

Provincial Freights.

TO NEW YORK.		TO BOSTON.	
Sydney	3 50	Sydney	$2 75
Lingan	....	Lingan	2 05
Cow Bay	4 50	Cow Bay	....
Port Calidonia	4 25	Port Calidonia	3 00
Little Glace Bay	4 00	Little Glace Bay	2 75

Foreign Freights.

New Castle and Ports on Tyne			£13@15 keel.		
Liverpool			12s. 6d.@16s. ton.		
Australian	9 50@	10 ..	Lehigh	15 50	16 00
do. Wallsend	10 00	10 50	Liverpool	13 00	.. ..
Bellingham Bay	11 00	.. ..	Pittston, ton	14 50	15 00
California	7 00	9 00	Scranton	14 00	15 00
Cumberland cks	30 00	32 ..	Scotch	13 00	.. ..
do. bulk	28 00	.. ..	Vancouver Island	12 50	.. ..
Chili	10 00	.. ..			

BOSTON STOCK MARKET.

(By Telegraph.)

BOSTON, Sept. 25, 1868.

Prices of stocks ranged to-day :

Calumet	57½	Quincy	—
Copper Falls	18¾	Cary Improvement	10
Franklin	14½	Isle Royal	—
Hecla	80	Water Power	15¼
Hancock	4½	Bos., Hart & Erie RR	22½
Minnesota	2	Rockland	—

SAN FRANCISCO STOCK MARKET.

A telegram from San Francisco, dated Sept. 23, quotes :

STOCKS.	Bid per ft.		STOCKS.	Bid per ft.	
Gould & Curry	94	@ ..	Belcher	..	@ —
Savage (per share)	94	@ 95	Uncle Sam	..	@ ..
Chollar Potosi	150	@ 153	Amador	..	@ ..
Ophir	..	@ ..	Imperial (per share)	99	@ ..
Hale & Norcross	49	@ 50	Alpha	46	@ 48
Crown Point	45	@ 46	Kentuck (per share)	—	@ 295
Yellow Jacket	1,227	@1,250	Cal. Steam Nav'n Co.	..	@ ..

AMERICAN

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WESTERN & COMPANY, PROPRIETORS.

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☞ Mr. T. P. PEMBERTON is Editor of the Mechanical Department and Agent for the JOURNAL OF MINING.

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NEW YORK, SATURDAY, SEPTEMBER 26.

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IRON MANUFACTURE ON LAKE SUPERIOR.

A little while ago we had occasion to speak of the inauguration of a new manufacturing enterprise in the State of Missouri, with the object in view of utilizing the deposits of zinc ores so abundant in that locality. It is now our opportunity to speak of another industry that has been established lately, and which, if we are not very much mistaken in our impressions, will soon become one of the largest industrial interests of the Northwest. We allude to the establishment of a large iron works at Marquette, upon the southern shore of Lake Superior. Hitherto it has been the custom to ship the iron ores taken from the immense deposits in that section of the country to Detroit, Erie and Cleveland, from which latter port large quantities of them have been forwarded on to Pittsburg, the great iron mart of the continent. The time seems now, however, to have arrived when, upon economical grounds, it is possible to do away, in part at least, with this expensive shipment of ores. It has been shown that pig metal and merchant iron can be manufactured at Marquette, in the immediate neighborhood of the ore deposits, at a rate of cost much less than at Pittsburg, the commercial centre of the iron interest.

The following statistics of comparative cost clipped from one of our exchanges, gives, we should judge, a very fair estimate of the respective rates of production:

PIG METAL.

PITTSBURG.

1½ tons ore at $12	$18 00
2 " coal at 4	8 00
Flux	1 00
Labor	3 00
Incidentals	1 00
Freight to Chicago	7 00
Total	$38 00

MARQUETTE.

1½ tons ore at $5	$ 7 30
2 " coal at 6	12 60
Flux	1 00
Labor	3 00
Incidentals	1 00
Freight to Chicago	3 00
Total	$27 00
Difference on pig metal in favor of Marquette	$10 50

MERCHANT IRON.

PITTSBURGH.

1½ tons pig metal at $31	$38 00
2 " coal at 3	6 00
Labor	15 00
Freight to Chicago	8 00
Total	$67 00

MARQUETTE.

1½ tons pig metal at $24 50	$30 62
2 " coal at 5 0	10 00
Labor	15 00
Freight to Chicago	3 00
Total	$58 00
Difference in favor of Marquette	$ 9 18

Basing their calculations upon estimates of the above character, a company formed some two years ago, have erected a blast furnace of some thirty tons capacity, together with a rolling mill, puddling furnace, and all the appurtenances necessary to the manufacture of merchantable iron. The rolling mill, we understand, is already in successful operation, and the furnace is soon to be set in blast. We see no reason why this enterprise, begun, most certainly, under very favorable auspices, may not meet with an eminent success. Ores are at hand; coal can be obtained at a slight rate of cost over and above the Pittsburgh price; labor is worth no more than at the latter place; and then again the rapid development of the Northwest and West, will offer an extensive and ever increasing market for the sale of their merchantable products. It is no matter of surprise to us that such an enterprise should spring into existence; rather, it is a surprise that instead of only one, there are not a dozen furnaces ready to enter upon this work of western iron manufacture.

But, again, if, as we believe, at no distant day, the peat beds which lie in the immediate vicinity of the ores can be brought into service in the production of a first-class quality of iron, a new impulse will be given to this new iron enterprise. They will be to the iron beds of Superior what the coal fields of Pennsylvania are to her deposits of ore. There seems, indeed, in all this, to be good grounds to hope for the realization of the prediction that Marquette is to be the Pittsburgh of the great Northwest. We shall watch with interest the development and growth of their new industrial enterprise, and hope that the anticipations of those who are immediately connected with it will be fully met. It certainly marks an era in the history of the metallurgical industry of the country, and, at a later day, its influence may become so extended as to bear no longer a sectional, but rather a national character. As such, it is no less our duty than, pleasure, to record what we hear in regard to its successful inauguration.

COMPARATIVE AMOUNT OF HEAT PRODUCED BY COMBUSTION.

The table of the units of heat, and amounts of steam generated by the combustion of one pound of different substances, given upon page 185, shows that hydrogen surpasses, in this respect, all other substances, (one pound being worth as much as four of carbon;) and that the combustible compounds of these two substances, or the so-called hydro-carbons, produce more heat in proportion as they contain more hydrogen. The first two substances in the list, hydrogen and marsh gas, are very bulky, and not available for general purposes; but the third, petroleum, containing, of all the rest the greatest proportionate amount of hydrogen, must of course, for the same weight, produce the next greatest amount of heat. The same is moreover true, for the same bulk, since in liquids there are no such interstices as exist among the fibres of wood or in pieces of coal. It is true that ether and alcohol contain, respectively, one and two atoms more of hydrogen than of carbon; but then this advantage is more than counter-balanced by the disadvantage of having oxygen in combination with that excess of hydrogen, forming no less a substance than water, which of course is not combustible, it being itself the product of the combustion of hydrogen. It is therefore rather a hindrance than an advantage, since on account of its evaporation a considerable amount of heat is rendered latent.

But, with all this advantage in the use of petroleum as regards the greater amount of heat produced by its combustion, (and that for a lesser bulk) it can by no means compete with coal in regard to price. The heat produced is less than double the amount of that produced by the same quantity of coal; therefore, in order to be upon an equal footing as regards expense, its cost should be less than double that of coal. Or, again, if we take into account the lesser amount of labor required in petroleum furnaces, than in those where coal is used, it may be said that there may still be an advantage when the price of petroleum is two or even three times that of coal. What is the case, however?

In New York anthracite coal, producing over 14,000 units of heat per pound, is sold at wholesale at the rate of about five dollars per ton, or a quarter of a cent per pound; giving therefore 56,000 units of heat for one cent. Crude petroleum costs about eight dollars per barrel, or twenty cents per gallon. Its cost per pound is therefore about three cents. But the combustion of one pound produces 23,000 units of heat, or a little less than 8,000 units for one cent. The advantage is then in favor of coal as being nine times as cheap as petroleum, and counting the labor required, it still remains four or five times as cheap.

But even in California, where coal is reported to cost twenty dollars per ton, and petroleum five dollars per barrel, the former will give 14,000 units of heat for one cent; the latter about 12,000 or 13,000 units for the same outlay. But if the latter should produce 14 000 units of heat for one cent—the same as coal—the gain then would be simply the less amount of labor required to keep the furnaces going, the smaller space occupied, together with ease in stowing away, etc. It must be acknowledged that the first of these advantages might amount to considerable. As an offset to them however, we may mention the danger to steamers in having such a large amount of very inflammable material on board in lieu of coal, which will not burn under such circumstances, even if a live coal were thrown into the midst of it. Some years ago, in the beginning of the "oil" excitement, there was a time, when, by means of an excessive overproduction, the price of petroleum was actually below that of coal, being at the wells only sixty cents per barrel, one and a half cents per gallon, or less than one cent for four pounds. This was, however, only a temporary matter. But even at such a low price, there would be still a disadvantage in its fluid state, which naturally involves loss, and necessitates the use of vessels in which to store it. The cheapest are, of course, barrels, and even they add to the price about four cents per gallon, or more than one cent for every two pounds—an increase of cost, in fact, double the whole price paid for coal.

MR. TAYLOR'S REPORT AGAIN.

Some time ago, we felt it to be our duty to criticize with severity the Report of Mr. TAYLOR, U. S. Commissioner of Minnig Statistics for the States east of the Rocky Mountains. Since the publication of that article, we are reminded of certain facts which render it probable that our sweeping condemnation, though thoroughly deserved by the Report itself, may have been personally somewhat unjust towards the Commissioner. The duty of a journalist to the public frequently requires him to judge of literary or scientific work by *prima facie* evidence; if it is well done, he praises it; if it is slovenly or incomplete, he assails it. In the present case, we accompanied our strictures with abundant proofs of their justice; and, so far as the Report itself is concerned, we are still convinced that it amounts to little or nothing, as a presentation of the mineral resources of the Atlantic States, or account of the condition and prospects of the vast mining and metallurgical industries of the East—interests which in point of fact exceed in importance and productiveness many times the comparatively young and feeble enterprises of the Pacific slope.

In fairness to Mr. TAYLOR himself, it remains to be said, however, that he has done his work without any special appropriation from Congress, and therefore without the opportunity to inspect personally the great field included in his department, or to engage the services of an able corps of assistants, such as Mr. ROSS BROWNE employed. Our esteem and regard for Mr. TAYLOR, personally, cannot lead us so far as to say that, even with these disadvantages to be reckoned in his favor, the document he has issued does him any particular credit. Perhaps it would have been wiser for him to decline so serious a task, in the absence of all the means absolutely necessary to its successful accomplishment. At all events, he should have embodied such a statement of the matter in his Report as would have warned his friends that it did not challenge the strict examination it has received. In a word, the bricks are poor, and they should have been advertised beforehand as made without straw.

One thing more. All that we have ever said in condemnation of this Report now falls with increased weight, not on the estimable and well-meaning author, but on Congress, which has neglected so long the mining industry of the East. For its effect on foreign nations and foreign capital; for its effect on national confidence and credit at home; for its effect in stimulating and harmonizing great enterprises in our land, we need a thorough presentation of the mineral resources of the whole country, and the productive manufactures based upon them. How long shall we lag behind the world in this respect? *No nation is really strong till it acquires an intelligent knowledge of its strength.*

THE UTILIZATION OF PEAT FOR SMELTING PURPOSES.

The use of peat in the smelting of iron ores has been frequently attempted upon many French and German metallurgical works. It has, however, generally proved that, for the most part, insuperable difficulties have stood in the way of attaining the end in view. The chief difficulty to contend with in the use of peat in blast furnaces seems to be the ease with which it crumbles into small pieces, thereby choking up the furnace, and, in the end, rendering it necessary to blow out. We are told of an occasional exception to this, in case of the use of very rich peats—the furnaces, under such circumstances, having given very satisfactory results. We are glad to learn that an attempt is now being made in this country to utilize the peat beds of the Lake Superior region for the purpose of smelting the rich ores of iron so abundant in that locality.

B. M. Peirce, Jr., Metallurgist and Mining Engineer of the French School, is attempting to prove, beyond all question, the adaptability of this kind of fuel to the smelting of ores in blast furnaces. Should his efforts be crowned with success it will be a fine thing for the Superior regions. Bituminous coal from the deposits of Pennsylvania or Ohio would no longer be a matter of necessity. There would, in all probability, be a saving of at least one-half in the cost of fuel. That would, indeed, be an item of no small consideration were it to come to the chances of success, as between two rival metallurgical districts. An allusion was made in our last issue, in the Mining Summary article upon the Copper District of Eastern Vermont, to the attempt made there, a short time ago, to utilize peat in the smelting of copper ore. Should the attempt to prepare it, so that it can be used successfully in the iron furnaces of Lake Superior, succeed, we shall consider that, other things being equal, the problem is likewise solved for the Vermont copper furnaces. We may, then, fairly consider that the experiments now going on, are, in point of fact, not for the Lake Superior region alone, but rather for all regions where peat and ore beds are found in close proximity, with, of course, a scarcity of all other kinds of fuel.

We hope soon to learn of the complete success of Mr. Peirce's attempts in the utilization of peat as fuel in the running of blast furnaces.

THE HIGHEST MINE.

In some one of our issues we spoke of a silver mine in the Andes mountains as being the highest mine in the world. With an eye, of course, to the glory of its own mining regions, the *Weekly Register*, of Colorado, brings us to task, and says: "We can beat that by at least three hundred feet." It then adds, that "The North Star mine, near Montgomery, is some five hundred feet above Ute Pass, which, according to Gen. Fremont's survey, is 11,200 feet above sea level." The facts in this case are new to us. We are, however, by no means satisfied that Gen. Fremont's surveys, as regards mountain heights in particular, were always correct to within at least three hundred feet. Preliminary surveys on exploring expeditions are always, in a greater or less degree, inaccurate. To the honor, however, of our own country, and, in particular, to the glory of Colorado, we hope that in this instance, at least, the survey was strictly accurate. If so, Europe no longer bears off the palm.

NEW PUBLICATIONS.

A SYSTEM OF MINERALOGY. DESCRIPTIVE MINERALOGY, *comprising the most recent discoveries.* By JAMES DWIGHT DANA, Silliman Professor of Geology and Mineralogy in Yale College. Author of a Manual of Geology; of Reports of Wilkes' U. S. Exploring Expedition on Geology, on Zoophytes, and on Crustacea, etc. Aided by GEORGE JARVIS BRUSH, Professor of Mineralogy and Metallurgy in the Sheffield Scientific School of Yale College. *Fifth Edition. Rewritten, enlarged and illustrated with upwards of six hundred woodcuts.* New York: JOHN WILEY & SON, publishers, No. 2 Clinton Place. 1868.

After having received a careful examination at our hands, we find that our honest judgment in regard to the merits of this compendious System of Mineralogy, coincides most fully with our first impressions. During the long interval of fourteen years that has elapsed since the fourth edition was given to the public, the science of Mineralogy has, as a matter of course, undergone many changes. Moreover, during that long series of years, it has taken many a rapid stride in the way of substantial progress.

We find that this new edition is fully up to the time. The author has carried out the plan of bringing the work fully up to the present standpoint as regards chemical researches, which have been carried rapidly forward, and mineral analyses, which, in connection with almost every species, have been largely multiplied. The crystallographic department of the work has also been subjected to a thorough revision, numerous and important investigations having, meanwhile, been made. There has been a large addition to the number of species, and, in a word, every part of the work has received a new accession of facts, thereby bringing it fully up to the present state of the science. So complete has been the change, and so perfect is now the work, that, as the author remarks, "the volume has unavoidably become enlarged. Not a page and scarcely a paragraph of the preceding edition remains unaltered, and full five-sixths of the volume have been printed from manuscript copy."

In regard to the faithfulness with which the author has done his work, it is stated "that neither the consultation of original authorities, the drawing of conclusions, nor the putting of the results on paper has been delegated to another." We find that a new and interesting feature has been given to the work in a systematic recognition and description of the *varieties* of species. The author has, in the present edition, endeavored to give to varieties their true place, and, in order to insure greater exactness in regard to them, in company with the description, the locality of each is given. Another new and highly commendable feature of the work is its historical synonymy. It is remarked that, "as now issued, the first author and the first place of publication of each species, and of each name it has borne, and of the names of all its varieties, are stated in chronological order, with the dates of all publications cited; and, besides, remarks are cited in the text when the subject is one of special interest. The facts and conclusions have been derived in almost all cases from the study of the original works themselves; and this Treatise has become thereby, to some extent, an account of ancient, as well as modern minerals. These historical researches added a third to the labor of preparing the edition for the press, thereby delaying the publication of the work about a year. But such studies are endless, especially when they relate to past centuries, and the work, however long continued, must be necessarily incomplete." The work has received another addition in the introduction of formulas on the basis of the new system of chemistry. The optical qualities of these species, which seemed to require this addition to their distinctive characters, have been briefly, but clearly given.

As regards classification, the general system remains unaltered. In this system, preëminence is given to chemical, the next place to crystallographic, and the third to the different physical characters. Again this volume is enhanced very much in value from the fact that the pyrognostic characters of the minerals have been subjected to a complete revision. This all-important work has been done by Prof. GEORGE J. BUSH, with the celebrated works of PLATTNER and VON KOBELL always at hand. Did space permit, there is much more that might well be said in regard to the estimable qualities of this new edition.

The fourth edition, it is well known to us, took a leading rank among the numerous works extant upon the subject, in the estimation of many of the scientists of Europe, indeed, by some, it was looked upon as a work of reference in case of conflicting views. This volume, then, so perfect, so complete, cannot fail to become the leading authority in the science of which it treats. It should not fail to reach the hand of every student, nor, indeed, every practical man who has anything to do with the subject of minerals. Almost any information that one may hope to find in regard to the species of the mineral kingdom is to be found upon the pages of this comprehensive work. We have used a good many works on mineralogy, but have met with none that begin to compare with this in fullness of plan, detail, and execution. It supplies a want that has long been felt by the student of mineralogy.

MINING COMPANY'S STATEMENT.

Marathon Silver Mining Company of Nevada.

A silver mining company has just been organized in the city of Philadelphia with the intent to develop a rich lode situated in the Reese River District in the State of Nevada. The working results of some of the companies in that vicinity, notwithstanding the many and great disadvantages under which they have labored, is a satisfactory evidence that a good lead, when worked with skill and economy, is a source of fair returns to those engaged therein. We have never lacked faith in the mineral wealth of the above-mentioned District, and are very glad to learn that a new, and, as we believe, thoroughly responsible organization are now ready to aid in the development of that part of the "Silver State." The organization of which we speak is called The Marathon Silver Mining Company of Nevada. It is organized upon a capital basis of $500,000, with $100,000 working capital. This working capital is divided into shares as follows: Preferred stock, 5,000 shares; common stock, 5,000 shares. This stock is not assessable, and is to be sold at the rate of $10 per share. The Company are now ready to dispose of only 2,500 shares of their working capital, and that, too, their preferred stock, which, under the terms of the By-Laws of the organization, will draw interest at the rate of 12½ per cent. per annum until the interest so paid shall amount to the par value of the stock. Moreover, this interest is to be paid in preference to all demands of stock for dividends, nor can dividends be made until such interest is paid. It is very clear, then, that it would be greatly to the advantage of those desirous of investing to secure some of this preferred stock, now thrown into the market at such favorable rates. In the prospectus that lies before us, we find a report upon the property of the Company. This property is the Marathon Ledge, situated about one half a mile south of Austin. It has a length of 600 feet, and a width ranging from five to seven feet. An incline along the vein shows it to be very regular. The gangue of quartz interspersed with the precious minerals fills the vein from the upper, to the lower granite wall. The ores are sulphides and chlorides, very evenly distributed through the vein, and work, as taken from the mine, about $80 per ton. It is very much to the credit of this Company, to say that it owes no man or corporation; that its property is paid for, and that it has a perfect title. Moreover, they are organized for *work*, not for speculation. Their property is so well developed, they know what they have got. Other interests in the vicinity have succeeded so well that, within reasonable limits, they know what, with skill and economy, they can do. In behalf of the mining interests of Nevada, the Great West, and, indeed, in the interest of the general financial welfare of the whole country, we hope this, with all other legitimate mining enterprises now springing into life, will meet with the success that is generally the reward of honest, skilful industry. Those desiring to negotiate for the purchase of any of the stock of this Company will address the President, WILLIAM M. HENDERSON, at the office of the Company, No. 154 South Fourth street, Philadelphia, Pa.

Original Papers.

PREPARED FOR THE AMERICAN JOURNAL OF MINING.

THE CHEMICAL EFFECT OF STEAM ON METALLIC SULPHIDES AT A HIGH TEMPERATURE.

NUMBER THREE.

BY DR. ADOLPH OTT.

In 1844, Prof. C. F. PLATTNER demonstrated that by the entire exclusion of the air, and at a low temperature, common and arsenical pyrites, as well as alloys containing arsenic are very slowly decomposed by steam; more quickly, however, by the co-operation of the air, but not as completely as by the action of the air alone. With the exception of the metallic sulphides already mentioned, the experiments were carried on with copper and zinc blende, galena, speiss cobalt, and various intermediate products, such as are subjected in Freiberg to metallurgical treatment.

In the experiments with steam alone, highly fusible glass tubes were employed, the ends of which were somewhat bent; but in the roasting with steam, with a slight access of atmospheric air, as well as in the controlling experiment with full access of air without steam, porcelain tubes were selected, having a length of two feet and an inside diameter of two inches. From the finely pulverized ore, an amount of twenty grammes was taken for each experiment. In case of the desulphurization by steam with a slight access of air, the porcelain tube was not placed in the furnace in a horizontal position, but was somewhat inclined, the steam being introduced at the lower end. This end was, moreover, closed by a well fitting clay stopper, in so far that the air could only enter in small quantities. The steam was admitted through a narrow glass tube. The upper end of the porcelain tube was also closed by a stopper of burnt clay, through which passed a glass tube. The stopper was allowed to fit somewhat loosely, in order, thereby, to allow a frequent stirring of the ore.

In the experiments with steam, with the application of a strong cherry red heat, Prof. PLATTNER obtained the same results as REGNAULT; and did not produce more favorable results by the simultaneous action of the air, than by the test experiment with air alone. The less the amount of air admitted, the slower were the pyrites decomposed. The result proved to be most worthy of note at a moderate red heat.

The use of steam for the decomposition of sulphuretted ores, and the simultaneous production of sulphur and sulphuric acid, were first proposed by RODGERS, in the *London Journal of Arts*, August, 1843, page 7; also in DINGLER'S *Polytechnisches Journal*, Vol. 89, page 443; and in the *Bergwerksfreund*, Vol. VII., page 109, and ROUSSEAU, *Bergwerksfreund*, Vol. VII., page 109, (L'Institut, by *Polytechnisches Centralblatt*).

Both are of the opinion that steam can be made serviceable in the roasting of sulphides, in order to convert them more completely into oxides, than can be done by the action of the air alone. They also speak of the converting of the generated sulphurous acid into oil of vitriol, as well as of the separation of the sulphur from the sulphuretted hydrogen which is likewise formed.

7. Experiments in a technical point of view, principally for the separation of arsenic and antimony, were undertaken by CUMENGE,* and according to him they have led to favorable results.

8. PATERA,† also, has introduced the desulphurization by means of steam, with good results, for the rich ores of Joachimsthal. The apparatus which he first used consisted of a muffle, without draught holes, the front part being kept closed. The steam was conducted from a distilling apparatus through a tube upon the ore, and through another tube which was inserted in the upper part, the vapor passed through a series of WOULF'S bottles, where it was condensed. In these bottles the volatile products, such as metallic arsenic, arsenious acid, sulphur, and fine particles of the ore were concentrated. In the stone which served to close the front part of the muffle, there was a small aperature. It could be closed by means of a small clay stopper, and was made in order to watch the progress of the experiment, and to stir the ore occasionally.

Ruby silver ore was soon converted into metallic silver. An ore containing 18 Mark of silver in 100 lbs., (about 8.5 per cent.) did not show after five hours roasting, a trace of arsenic, and the silver could be seen therein by the unaided eye. For the separation of the metallic silver from the other metals, which were mostly converted into oxides, PATERA used a mixture of moderately diluted oil of vitriol and saltpetre, in which the silver, with the oxides and respective acids of nickel, copper, cobalt, bismuth, and arsenic were dissolved. From this solution, after it had been well diluted, the silver was thrown down as a chloride, by means of common salt, reduced by a simple galvanic battery, and finally melted. The residues, which formed about 50 per cent. of the original quantity of the ore, contained only from ten to twelve loth of silver, per 100 lbs., and were easily worked for nickel, cobalt, copper and bismuth.

Experiments upon a somewhat larger scale, but with a more simple apparatus for the condensation of the volatile products, have established the fact that this method is well adapted to the extraction of the silver in the rich ores of Joachimsthal, which contain, at the same time, other valuable metallic products.

* *Annales des Mines*, fifth serie, Vol. I., page 425, also Berg-und huttenmannische *Zeitung*, 1853, page 561, 580, etc.

† Jahrbuch der K. K., geologischen Reichsanstalt, fifth year, No. 3. page 611. Berg-und huttenmannische *Zeitung*, 1855, page 131. *Bergwerksfreund*, Vol. XVIII., page 295.

Correspondence.

To insure insertion of correspondence in our columns, the full name and address of the writer must be given.]

From the Rocky Mountains.—No. III.

Golden City is at the base of the mountains. Fire brick for the smelting works is made here. It has about 1,000 inhabitants. It is strange to note the ambition of western villages to become cities; as they cannot attain the reality they console themselves with the name.

The road from here to Central City winds through defiles and over mountains; some of the inclines being three miles long, and as steep in parts as the roof of a house. This is considered in Colorado, however, quite the proper grade. It is surprising how the coachmen can drive their six in hand at a smart trot down these slopes, on which there is barely room for the coach to pass, and where a loose stone or the fall of a horse would be sufficient to upset the stage over the unfenced hill-side. Wild raspberries, strawberries, currants, etc., grow abundantly along the sides of the mountains.

On entering the ravine leading to Blackhawk and Central City, the first indications of gold washing are seen; flumes or launders being laid down at one side of the stream, water is turned into them, the loose earth of the bottom of the stream, or the stamped ore which has been washed down from the mills, is stirred at the upper end of the flume, across the bottom of which laths are nailed at intervals which detain a small quantity of mercury poured in. The gold dust when washey down combines with the quicksilver, and should there be and nuggets they are detained by the laths, owing to their weight.

The gold amalgam is extracted at intervals. I may here state that the miners in Colorado have adopted a different system of washing down clay banks to extract gold, or discover veins from that in vogue in California, where a jet of water, under high pressure, is used. Here they turn a stream into a drain, made along the hillside. This being let run down the precipitous mountain, and aided by human labor, makes enormous gullies, and this causes the waters of Clear Creek—the name of which is no longer appropriate—to be always of a muddy consistency.

From the commencement of the defile of Black Hawk, veins are seen running on each side into the mountain. Some are tunnelled on, and prospecting pits cover the mountain side. All these to near Black Hawk have been abandoned, however. At the latter town, which is in fact but a continuation of Central, several lodes are being worked on a pretty extensive scale, such as the Bobtail, the first and second Gregory, the Bates, etc., and judging from the heaps of refuse stuff, the workings must be considerable. The marks of decay are very evident all along through these two mining towns of Black Hawk and Central City—abandoned machinery, empty houses, and others out of repair, combined with the want of level ground to build the houses on, give the place a most forbidding aspect; the steep mountains around are perfectly bare and dug up everywhere. There seems to be a great number of lodes, and it has every appearance of a good mining district. The veins that I observed seem to be nearly perpendicular running nearly N. E., S. W., and the sulphuret ores are attained at a small depth. Almost all gold veins, are worked for their gold, though I was told there is a silver lode in the mountain over Black Hawk. The sulphurets of iron and copper being combined with the gold, cause a peculiarly refractory ore for treating by amalgamation, as I am told roasting is entirely ineffectual in freeing the gold, or at least in making it available for amalgamation. If such be the case, it must be owing to some coating formed by the volatile metals on the surface of the gold particles during roasting, which envelopes them and prevents the action of the quicksilver. Numberless trials have been made to effect the extraction of gold from these sulphurets by amalgamation, but as yet without success, and the only method which has given satisfactory results has been by smelting, which is too expensive, however, to be applied to any other than rich ores or tailings.

Professor HILL has erected works on this system in Black

Hawk. He roasts the rich ores in heaps, the lumps being broken to about the size of the first, a heap of fifty or sixty tons is piled up on a stratum of billets of wood, a funnel is left in the centre to fire the wood through, and the whole heap is covered with a layer of tailings from the stamps. The fuel is consumed in about twenty-four hours, and then the sulphur and other combustible portions of the ore continue burning for several weeks, and are finally expelled. The ores are reduced in a reverberatory furnace, the hearth of which extends to a length of some twenty yards. They are first introduced at the end farthest from the fire, and are gradually pushed on towards the heated portion. A copper matt, with which the gold and silver is combined, is formed in the furnace, and this Mr. Hill finds most advantageous to ship to Swansea for refining and extraction of the gold and copper. In consequence of the failures of amalgamating processes for the extraction of the gold combined with the sulphurets of iron and copper, the miners have reverted to the old system of passing the pounded ore from the stamps over amalgamated copper plates, and in some mills, after passing from these, it falls on percussion tables, the bottoms of which are formed of corrugated copper plate, also covered with a coating of mercury. This extracts any free gold which may have escaped on the fixed plates, and gathers in the grooves some of the richest portions of the tailings. Probably more than half the gold is lost by this system, which, if it has no other merit, can claim that of extreme simplicity. Sometimes the tailings are saved, and, if rich enough, are treated in pans, or are smelted. This may be considered the result of ten years experimenting on the refractory gold ores of Colorado.

Attention has been turned within the last two years to the silver ores of Georgetown, situated about twenty miles from Central City, on the upper part of Clear Creek. Across the mountain, and about six miles from Central City, is the village of Idaho, on the banks of Clear Creek, a stream which, though here only a short distance from its source, has a large body of water, derived from the melting snows on the surrounding mountains. From here the road to Georgetown passes through a pleasant valley, from a quarter to a half mile wide, and with but a gentle ascent. This valley is all capable of cultivation, and the wooded and precipitous mountains rise on each side. Veins occur all along, and have been partially worked. There are several gold-washing establishments beside the river. The alluvial deposit called here, when heaped up in any quantity, a bar, is washed out, and the workings are often carried under the bed of the stream, the pumps to keep the diggings clear of water being worked by a water wheel. Many substantial mills have been erected along this valley, but all seem to be idle at present. On nearing Georgetown the mountains become more precipitous and higher, and the scenery is quite Alpine. This has all the appearance of being a rising place, and is pleasantly situated in a valley, surrounded on three sides by mountains. There is an excellent hotel here, which cannot be generally said of the other towns of the territory, and it is becoming a favorite resort of Eastern people. Mr. Colfax and party had been there the day before I arrived, and Grant, Sherman, and Sheridan a short time previously. Besides, there were many Congressmen and other Easterners staying in the mountains. This, I think, will be useful to the territory, as it will make it more known to capitalists and induce them to invest in its mines, thus obviating the great paucity of money the country suffers from at present. The silver mines are situated in the mountains around within a radius of ten or fifteen miles, and at elevations of 2 to 3,000 feet above Georgetown. This place is itself 8,906 feet above the sea, and Denver 5,387 feet. This elevation of the mines is a great disadvantage, as the carriage of the ores on pack animals from the mines to Georgetown costs from $15 to $20 a ton; and, owing to the deep snow and long winter, stores of provisions, tools, powder, and every essential, will have to be laid in before the snow covers the ground, and the ores must lie over at the mine for six months, which circumstances will cause the employment of considerable capital necessary should the mines be worked throughout the year. D. COGHLAN.

Scientific Meetings.

THE ANTIQUITY OF MAN AS DISCUSSED AT THE MEETING OF THE AMERICAN ASSOCIATION.

CONCLUDED.

Prof. SILLIMAN, of New Haven, said it had been his fortune to spend a good deal of time, in the course of the last few years, in a critical examination of a portion of the very region referred to by Mr. WHITNEY. He passed a large part of last summer in the vicinity of Jamestown, in Sonora, close to one of the most remarkable of those mining regions which have been developed particularly in that county. This examination was accompanied by a very diligent inquiry as to the possibility of the occurrence of remains of animal life of whatever description, or of organic life, in connection with these deep-lying placers. He inquired of all the miners with whom he came in contact particularly with reference to the existence of any evidence of man or of his works, or of the bones of his skeleton. He was bound to say that there was not the smallest particle of evidence brought to light to his knowledge, either beneath Table Mountain or elsewhere, of the existence of man, either in the form of any portion of his osseous structure or any of his handiworks. He had listened the other day with great interest to the remarks of Professor BLAKE on the occurrence of human remains in this region, but he thought the evidence of the occurrence of such remains under the lava of Table Mountain was insufficient. He here exhibited one of four molar teeth of a mastodon, which tooth was taken in February of this year from beneath the Table Mountain, in what is known as Hughes' Tunnel, at a distance of more than 1650 feet in the tunnel. The skeleton occupied a superficial area of twenty-five feet, the bones being mainly soft, so that the finger could be thrust into them. It was new to find such bones under Table Mountain, the mastodon had never been attributed to this horizon. This mastodon was found four and a half feet above the bed rock in a mass of non-auriferous gravel, and if this formation is Miocene Tertiary it puts the mastodon in America back to the date at which it has been found in India. Whatever might be the geological age of the formation, there is no evidence of the existence in this same horizon of man. He thought, perhaps, the evidence in favor of the authenticity of the skull presented by Prof. WHITNEY was rather favorable to the opinion that it is a true find, and that it should have the benefit of the doubt; but of Dr. JONES, who had so great a hand in the transmission of the bones, he would say, that, perhaps, he was somewhat more credulous than the race of geologists. Moreover, it was known that throughout the calcareous formation there were found in the earlier history of Californian discovery, many skulls, several of which, as is generally alleged, have been found in limestone caverns so common throughout the limestone zone. These were not unfrequently incrusted with calcareous matter.

Prof. BLAKE called attention to the direct contradiction by Prof. WHITNEY of the evidence which he had presented of the existence of relics of man under Table Mountain. As already explained at the time of reading his paper he had not seen the relics in place there, but his information was derived from Dr. SNELL, who had even given the details of the precise position of some of the relics. Dr. SNELL stated that one of the objects came from the York Tunnel, 314 feet below the surface. But as the evidence was discredited, he would withdraw it until he could make further investigation of the locality and obtain more facts. He observed, however, that it was due to Dr. SNELL to say, that he was a man of many years, of good reputation, an enthusiast in such matters, but could not have any object in misrepresenting the facts, and he believed that there was some misunderstanding or mistake in regard to these relics. He [Prof. BLAKE] wished to arrive at the truth, and felt bound to present the evidence as he received it; but as the two statements were in direct contradiction, he preferred that the subject should remain in abeyance until there could be further investigation.

He wished, however, to consider the question of the age of the deposits of Table Mountain, and begged leave to differ from both of the gentlemen who had preceded him in regard to it. He did not profess to have examined all the fossils which came out from under the mountain, but he preferred to judge of the age of that mountain by studying the topography of the country and the evidences of volcanic activity in other places, and by making such a deduction as he was entitled to make upon their evidence, irrespective of the fossils. He did not think the formations were as old as the miocene division of the Tertiary. The occurrence of the Mastodon could be taken as evidence to the contrary. He would not pretend to judge of the evidence presented by the fossil plants, but as it was acknowledged to be scanty and fragmentary, it had no weight whatever with him. Much more material, and a greater knowledge of the vegetation of that region, were necessary to give value to such evidence.

He believed, also, that the deposits of Table Mountain and of Bald Mountain are approximately of the same age; at least that they belong to one epoch. Prof. WHITNEY had cited the occurrence of the remains of the Rhinoceros under each. Should not this be taken as an indication at least of their being of the same age? They were in the same region and topographically similar, and he could see no good reason for thus assigning them to two different periods.

The volcanic action in California had not ceased so long ago as the close of the Miocene. There had been outflows at much later periods, and he could show places in the Sierra Nevada where lava streams partly filled existing valleys—valleys formed since or during the glacial epoch. Extinct volcanoes, there and in Nevada, looked as perfect and fresh as if formed but a few years ago.

According to Dr. SNELL, also, it was not new to find the remains of the Mastodon under Table Mountain. There were several teeth in his collection which were said to have been taken out, and on this point there was other evidence, for some years since, a miner at Knight's Ferry, lower down the valley, had given Prof. BLAKE the tooth of an *Elephas* and fragments of large bones, which he stated were taken out of a tunnel under the lava. From this and other facts, he had never doubted the occurrence of remains of the extinct *Elephas* and *Mastodon* under Table Mountain.

Prof. HUNGERFORD thought that the evidence in this matter is of the class known as cumulative. He believed the only true method of investigation was to examine the isolated facts, and he thought that a great deal of all that had been written and said upon the subject of the antiquity of man would go for zero. It was curious to follow this discussion and see how much of it should go for nothing as evidence of an antiquity beyond the usual accepted creation. Granting the existence of human remains cotemporaneously with the remains of extinct mammals, it is to be considered whether the extinct mammals actually come down nearer to the present epoch than we have supposed, or does the existence of the human race extend further back than we have hitherto supposed?

The discussion of this subject was resumed on the following day. Prof. BLAKE said that as some doubt had been thrown upon the authenticity of the human skull discovered in California, which he had noticed, he withdrew his notice of it in order to make another investigation of the locality, and also of the tunnel in which it was reported to have been found. It was evident, however, that the stone relics, wherever they were dug up clearly showed the existence in California of a race of men superior to the Digger Indians of the present day. The only remaining evidence before the Association, from that region, was the skull shown by Prof. WHITNEY. In making remarks on this relic, he wished that his motives would not be misunderstood. Until after the close of his remarks on the preceding day, he had never had an opportunity of examining that skull. In a case of this kind, the public was entitled to have all the evidence of fact that was attainable. This fragment of a skull from the shaft in Calaveras county, was not waterworn or rubbed by attrition in the bed of the stream or elsewhere; the edges were sharp and angular, and the presence of other bones and of a fragment of shell evidently used as an ornament, crowded into the base of the skull, also indicated that the skull had not been rolled in the drift, but the appearances rather indicate it to be the remains of an Indian grave. He had heard the statement made in California, that the bone of a bird was found cemented to the skull; and he had only just heard that in cleaning the piece of the skull from earth and gravel, the shell of a snail was found, identical with the species now existing in that county. Such shells were very light and fragile, and it was difficult to conceive how it could have been rolled and tumbled, and forced into the position in which it was found, without having been entirely destroyed, indeed, its presence was good evidence that the skull had not been drifted or washed into the gravel bed.

Prof. COPE said that in the post-pliocene of West Virginia many snail shells were found preserved among the remains of extinct mammalia.

Prof. GILL remarked that the evidences discovered certainly assigned to man a greater antiquity than chronologists were inclined to allow.

Prof. ANDREWS said that in Southern Ohio he had found quite a number of extinct mammals, especially the mammoth and mastodon; but in no case had he found any portion of these remains so far back as our unmodified drift. All had been found in surface material. As to the skull found in California, he had great doubt about its authenticity, but thought it had been placed in the shaft where it was found; as to the accumulation over it, judging from the rapid accumulation of volcanic matter, it would not be necessary to assign to it any great antiquity.

Mr. GRIMES said there might be some mistake about that skull. He confessed that he had that impression as soon as he looked at it. Those naturalists who had discussed the antiquity of man had made one of their principal arguments from the inferiority of the skull—that there was some mark on the skull to indicate inferiority of character. Prof. HUXLEY used that argument. But one thing was certain; the skull exhibited by Prof. WHITNEY, in its formation, indicated rather a superior character. According to its position it ought to be one of the first created, but if that was the form of the first created man on this earth, then, instead of mankind progressing, he has degenerated considerably, for, if there was anything in craniological science, that individual was superior to the majority of those present. [Laughter.]

Prof. HILGARD thought the skull might have been tumbled into the shaft from above.

Dr. GIBBON said that some years ago, when he was in active employment at the mint, one of the miners brought him from a very deep shaft a specimen of a bone. He was not enough of a comparative anatomist to determine its character, but he sent it to a friend in Philadelphia, who told him it was the lower jaw of a cod-fishbone. If the earth had fallen in and buried the cod-fish bone, the remains would be found after some time at considerable depth, and that would be something to arouse the curiosity of geologists. A great many such accidents might have occurred in remote time.

Mr. B. WATERHOUSE HAWKINS suggested to those collectors who exhibited specimens, that they should leave them in their primitive condition, and let some portion of the matrix in which they were found adhere to the specimens, and not take so much pains to put them into exhibitional trim.

On motion of Prof. LYON, the general session then closed.

Manufacturing and Mechanical Notes.

No. XXXIII.

The Rhode Island Locomotive Works.

These works, which formerly belonged to the celebrated Burnside Rifle Company, are located at Providence, R. I., and are advantageously situated near the Providence, Hartford and Fishkill, and the Providence and Stonington Railroads. It is about two years since the first tools suitable for building locomotives were put in operation here, and these tools, as well as the workshops, are of the most complete modern description, being built with especial reference to locomotive work. The system carried out in the manipulation of the work is admirable; standard gauges being used for every measurement and every part, and no employee being permitted to use a rule upon the part he may be engaged upon. This system ensures accuracy of workmanship, since a multiplicity of measurement from rules of doubtful accuracy is avoided, and it permits the different sizes of the work to be reduced to a certain number of standards, and disposes in a very great degree with practical measurements, and it also allows every working part of the machinery to be duplicated. In case of disarrangement or loss, however trifling, such as the dropping out of a pin or bolt, the convenience of having a duplicate part of the exactly required dimensions is very great, and in almost every case will prevent delays and oftentimes accidents. The advantages of thus duplicating parts is more apparent when, for instance, a locomotive goes into the engine house after a trip, as any part can be adjusted or repaired in a short time, thus permitting a speedy resumption of the regular trip and obviating a detention in the repair shop, which otherwise would require a rod, lever or guide to be first draughted and a pattern made for it, then forged, planed, turned and fitted. Where there is a great demand on the rolling stock of a road, or where the conveniences of repair are limited, a detention is extremely harrassing; but this can be almost entirely obviated by having access to duplicate parts of the engine, that can be readily put in place with little or no fitting.

The locomotives of the first-class, built by this company, have their guides, wrist pins and piston rods made of the very best steel. The yoke of the engine instead of running straight across from frame to frame, is carried up and cut out concave to suit the circle of the boiler, which is an addition of strength and an improvement in appearance. The boiler-plates are all planed at the calking edges before being riveted. The weight of the locomotives built at these works varies from eighteen to forty-five tons. The largest engine has cylinders twenty inches in diameter and twenty-four inches stroke, and will weigh forty-five tons in running order, without the tender. The company make four, eight and ten-wheel locomotives, and also manufacture dummies, boilers and castings of all descriptions. The capacity of the works is to turn out a locomotive each week. The largest freight engine has ten wheels, four and a half feet in diameter, and cylinders eighteen inches bore and of twenty-four inches stroke—the boiler-shell being forty-eight inches diameter and containing one hundred and fifty tubes, each two inches in diameter and thirteen feet long. The fire-box is sixty-four by thirty-two inches wide and sixty inches deep.

This company manufacture engines for the Providence and Worcester, Union Pacific, Central Pacific, Toledo, Peoria and Warsaw, Chicago and North Western, and the Ohio and Mississippi Railroads.

They have also turned out a large number of first class engines for various roads in New England as well as New York and the West, and for some time they have been at work on the locomotives ordered for the great Pacific railroad. A short time ago three powerful engines with ten wheels each, designed for drawing freight cars, were ready to be taken to the Pacific road, on which they are to be used. They weigh over thirty-five tons each and are numbered 105,

106, and 107. Two others, one designed for the Buffalo Corry and Pittsburg road, named the "Sherman," and another for the Chicago and Nortwestern road, named the "Wasp," were also ready at the same time.

Mr. W. S. SLATER is President of the Company, E. P. MASON, Treasurer; J. G. STONE, Secretary, and B. W. HEALEY, Superintendent.

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The American Papier Mache Manufacturing Company, of 11 Pine street, New York city, have made some of the most novel uses of paper imaginable. They have succeeded, after great expense in experimenting, in preparing paper by the aid of chemicals, so that it can be fashioned into water pails, fire and ship buckets, toilet and state room sets, spittoons, milk pans, etc., and made far more durable than the same articles of wood, tin, copper, or other metal, or even India rubber or gutta percha. These articles are perfectly water-proof, are non-absorbant, and therefore inodorous. Being non-conductive, and not effected by acids nor by extremes of heat and cold, they are peculiarly applicable to many uses to which metallic utensils cannot be applied. Articles made of this prepared material will not rust, shrink, bend, break, water-soak, or retain odor, and for beauty and finish, combined with lightness and durability, are unequalled. The utensils can be placed in an oven and subjected to a heat sufficient to boil water without being in the least injured; and they may be exposed to the action of the sun or a dry atmosphere for months, or subjected to extreme cold, or even the roughest usage, and still retain their usefulness entirely. All the articles manufactured are coated or covered with a hard and beautiful enamel, which is not solely relied upon for the durability of the wares; the paper being thoroughly impregnated with a water-proof preparation, will not water-soak or impart the least taste to the liquid contained, even if the coating should wear off. For hospital and sanitary purposes, articles of this kind are peculiarly valuable. The goods have been subjected to severe critical examination at various State Fairs where they have been exhibited, and have obtained premiums and special mention.

THE HARTFORD STEAM BOILER INSPECTION AND INSURANCE Co's report for the month of August is as follows:

Visits of inspection made, 255; number of boilers examined, 416; external examinations, 147; internal examinations, 84; number tested by hydraulic pressure, 30; number of defects in all discovered, 57; *number of dangerous defects*, 14; furnaces out of shape, 20; fractures, 4,—2 *dangerous*; burned plates, 5,—2 *dangerous*; blistered plates, 21,—4 *dangerous*; cases of incrustation and scale, 35; cases of external corrosion, 26; cases of internal grooving, 2; water gauges out of order 16; blow-off apparatus out of order, 2; safety-valve overloaded 13,—3 *dangerous*; pressure gauges out of order, 28; cases of deficiency of water, 2; *both dangerous*.

We would call particular attention to the number of dangerous defects pointed out by the inspectors as above specified. Who can say that more than one explosion may not have been prevented by this month's work alone?

Personal.

COL. C. D. POSTON, formerly of Arizona, but late of Washington, accompanied J. ROSS BROWNE, Minister to China, as Commissioner of Agriculture. We learn that Baron Richthofen, also accompanied the mission in the character of geologist. The object of his mission will be a thorough and scientific examination into the mineral resources of China. The importance and propriety of such a commission did not become apparent until it was too late to secure a salaried appointment from Washington. To meet this emergency a number of wealthy gentlemen of San Francisco raised the means necessary to defray the expenses of the commission, and he sailed with Messrs. Browne and Poston.

SAMUEL J. SLOAN, C. and M.E., we are pained to learn, was killed by an accidental explosion of nitro-glycerine in the Phœnix mine, Lake Superior, recently. He was engaged to charge and fire the holes, and was experienced in the use of the article. As he was alone at the time of the accident, it can only be conjectured how it occurred.

JAMES H. MILLS, Esq., editor of the *Montana Post*, was in this city during the past week, on a visit. He spoke encouragingly of the mining prospects of Montana, and especially of the intention of its people to prosecute their enterprises in a legitimate and business-like way.

Mr. R. W. RAYMOND, our readers will be glad to learn, has arrived in this city from the mining regions of the Pacific Coast. Vigorous articles from his pen may be expected upon the condition of affairs in the mining centres of the West.

Mr. CRAIG, Superintendent of the Philadelphia mine at Alamos, Lower California, it is reported, was mortally shot by another American there a short time ago. The latter afterwards dangerously shot himself. Further particulars not received.

GENERAL G. K. STILES, of Brooklyn, N. Y., is now on a visit to Alpine county, California, for his health, and, incidentally to look after certain mining interests with which himself and his friends are connected.

Prof. SILLIMAN, of Yale College, is in Colorado Territory for the purpose of examining its geology and general characteristics, and procuring specimens for the Yale college cabinet

Mr. W. B. EWER, senior editor of the San Francisco *Mining and Scientific Press*, is on a visit East for his health. He will probably remain with us for several months.

Mr. JOHN MITCHELL, F.R.S., author of a Manual on Assaying, died recently at Valparaiso, South America, under distressing circumstances.

Prof. CHARLES H. HITCHCOCK has been appointed State Geologist of New Hampshire, and has already entered upon his labors in the field.

FREDERICK SCHÖNBEIN, the eminent German chemist and author, is dead. He was the inventor of gun cotton.

Mrs. CUNNINGHAM, of the Burdell murder notoriety, is said to be mining in Mexico.

All Sorts.

☞ The newest swindling dodge connected with mining is that of a resident of Colorado, who has a process by which perfectly barren rock may be made to yield a fabulous amount of gold, when tested by assay. The Denver *News* has the credit of revealing this important secret, a knowledge of which we are convinced is invaluable to all persons having mines yielding very low grade ores. It appears that a specimen of ore which was sent to the Denver mint for assay, upon being struck with a hammer to break it, revealed several very neatly drilled holes that were before hidden. They were about one-eighth of an inch in diameter, and may have been *worm* holes, but Dr. Munson concluded that they might have contained the gold he was expected to certify to. Fearing this was lost, he did not make the assay. This is an awful tricky world.

☞ The discoveries of gold on the Cimarron river, near the corners of Colorado, Kansas, New Mexico, and Texas, are creating great excitement, and miners are rushing into the new diggings. The mineral belt is the same that has already been opened and worked from Montana and Mexico. There can be no doubt of the existence of valuable mines on the Cimarron as well as on the Canadian and other forks of the Arkansas heading in the Rocky Mountains. The new diggings are on the line of the proposed extension of the Eastern Division of the Union Pacific Railroad to Santa Fe.

☞ On a common road wheat would consume its own value if carried three hundred and fifty miles. In other words, it would be worthless at that distance from market, while by rail it can be carried three thousand miles at a profit. To state the matter differently, railroads multiply by ten the distance from any grain market at which its wheat may be raised. The same remarks apply with evident variations, to other productions, as ores. We shall soon know what benefits can be derived, in this respect, from the completion of the Pacific railroad, in regard to the permanence of some of the lead and other mining districts situated near the line of the route.

☞ We understand that the Atlantic works, at East Boston, have just concluded a contract to build an iron brig of about 350 tons, for the purpose of carrying molasses from the West Indies. She is to be built in compartments, so as to bring the molasses in bulk instead of hogsheads, as is now the custom, and will have a carrying capacity of about 800 hogsheads. It is estimated that this method will make a very large saving in the transportation of this article, and if it proves successful will be generally introduced. The brig will be completed about the first of January.—[Boston Journal, 16th.

☞ A Parisian invention, now being introduced in London, is a wooden parasol. They are painted to represent peacock's feathers, each feather being a separate rib, like those of a fan. By ingenious mechanism they can be fastened into the form of a parasol, and can also be folded up into as small a compass as a fan, which purpose they answer admirably. They can also be turned into a variety of things, and have joints by which they shade the wearer on any side where the sun is too powerful.

☞ Earthenware Coffins are to be introduced in California. They will cost much less than even those made of wood, and being a novelty, they will undoubtedly be "all the rage." Here as well as there. When we consider that earthen vessels have kept wines in a perfect state of preservation for nearly two thousand years, can we doubt that the body of a man can be preserved in similar vessels if like care is taken.

☞ Perhaps the best evidence of the permanency of the mines of the precious metals may be found in the fact that, after more than three or four centuries of operation, more or less active, the silver mines of Mexico remain as her greatest industrial resource, the basis of her commerce, and the best security she can offer for the cost of any improvement she may contemplate.

☞ A nugget of gold, weighing half an ounce, was found in the South Esk, near Esk, Forfar, Scotland recently.

Gndit about Minerals, &c.

☞ It is reported that the extensive buildings and machinery of the Trenton Iron works, owned by Peter Cooper, of this city, and Chas. Hewitt of Trenton, have been sold to the Erie Railway Company, who intend removing the machinery on the line of the Erie railway. The business, however, will be continued at Trenton until April next, in order to sustain during the rigors of the winter season the numerous workmen—some four hundred—and to afford them time to provide for the emergency. The removal of such a large manufacturing establishment will be a heavy blow to the commercial and business welfare of Trenton, as the sum of $500,000 was annually paid to the workmen there employed.

☞ The Florence *Italie* states that satisfactory experiments have been made in the Gulf of Spezzia with Italian coal found in the valley of the Taro, a small river in Upper Italy which falls into the Po. Comparative trials were made of this coal against the best sorts of foreign coal, among others against Cardiff coal, and the Italian coal came out of them creditably. A mixture of the Taro coal and of Sanparola coal—which latter had hitherto been worthless—has produced a very good combustible. From the Taro good coal gas has been extracted in sufficient quantity to light the whole town of Spezzia.

☞ A line of propellers, it is stated, has been established to run between Washington, D. C., to the Schuylkill county coal region. By this means an exchange of anthracite and Cumberland bituminous coal will be effected. The size of the Chesapeake and Ohio canal does not admit of navigation by boats of two hundred tons capacity. Washington, therefore, is to be made a place of deposit for the bituminous coal, which will be conveyed to Philadelphia, and the boats will then proceed to Schuylkill county to obtain a return cargo.

☞ A correspondent writing from Lower California, says: The only two reducing mills in the Territory have suspended work on account of the high rate of duties on the exportation of silver. It is believed that the Triunfo Company will also have to suspend, although it is the richest in Lower California.

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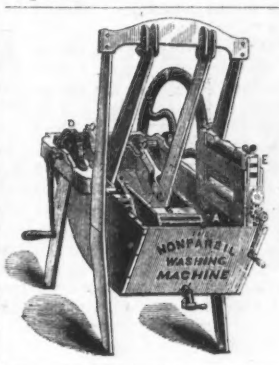

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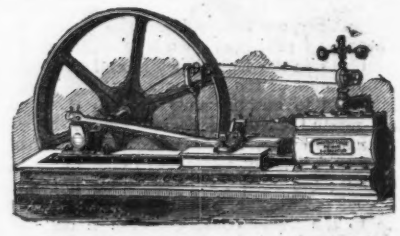

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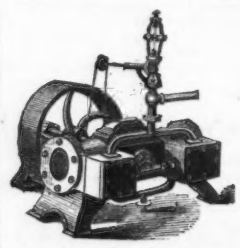

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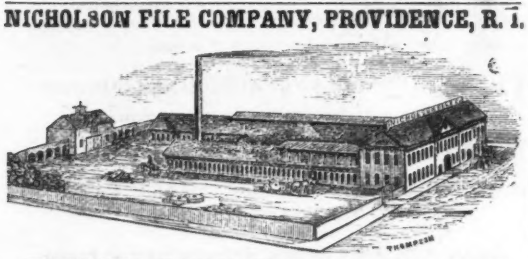

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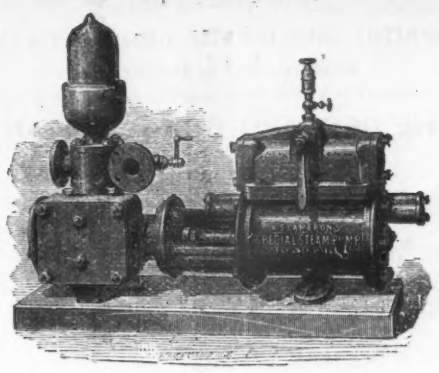

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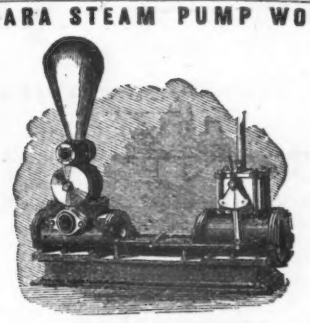

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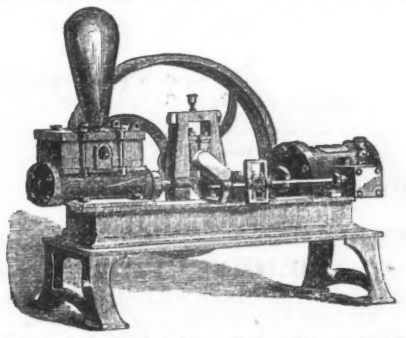

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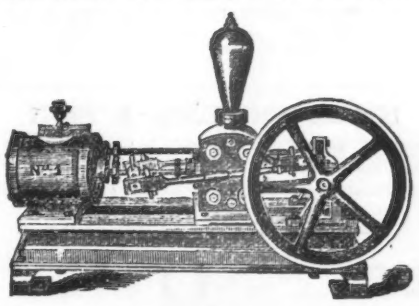

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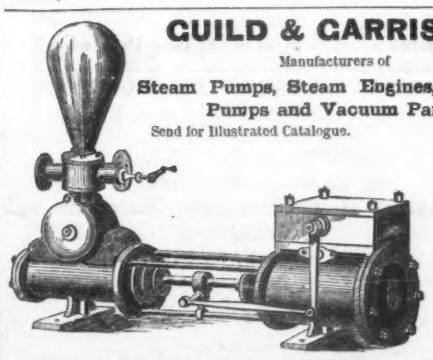

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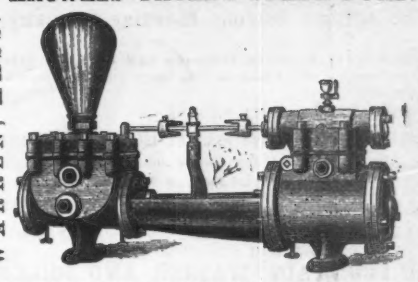

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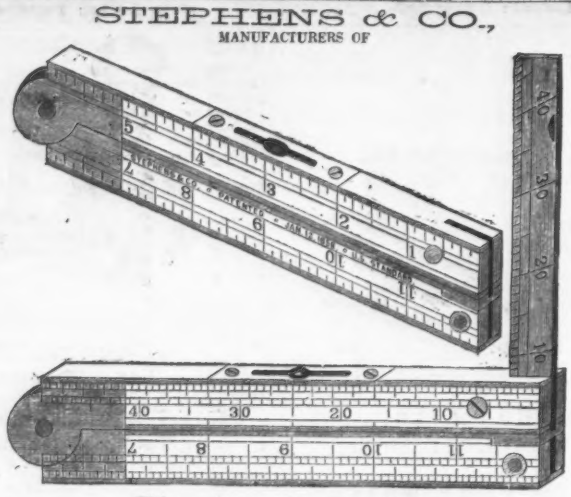

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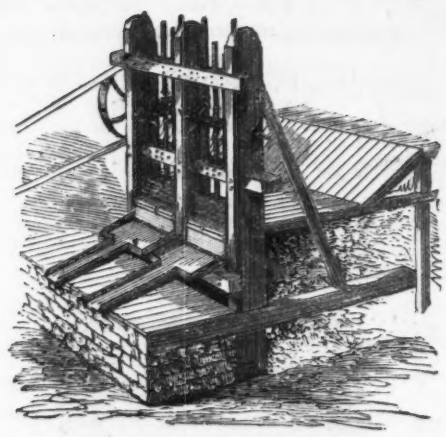

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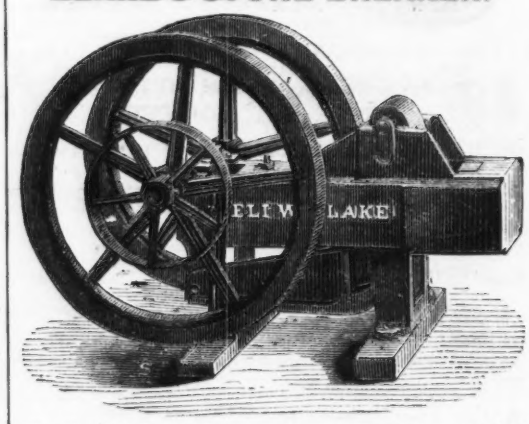

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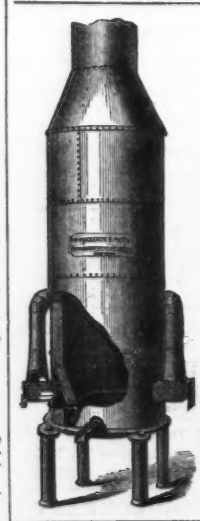

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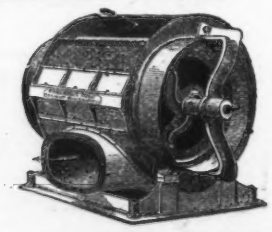

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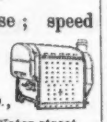

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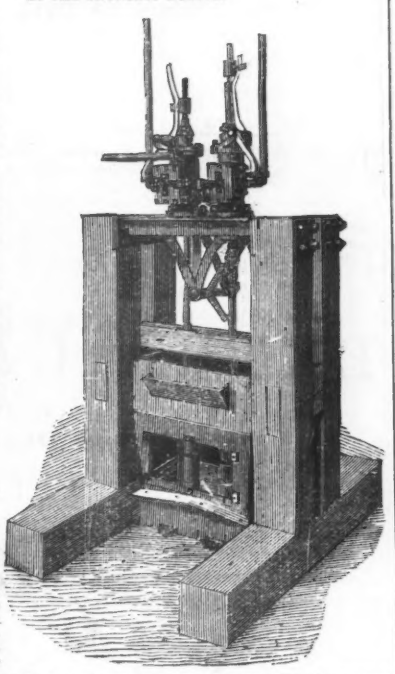

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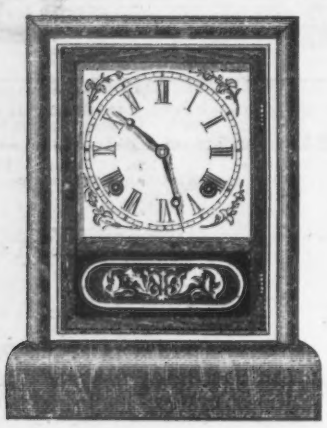
American Clocks.

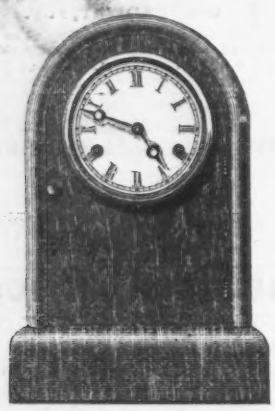
In the retrospect of boyhood's days who does not remember the "varnished clock that ticked behind the door," and the long pendulum rod with its bright weight that swung with solemn measure, as hour by hour waned away. This old clock had seen the demise of the clepsydra, the sun-dial, and the hour-glass, and had held its place a long period, and its perfection of "time" seemed to defy improvement; yet, like all things that "pass away," the old clock is gone and almost forgotten, and forms of progress of this "later day" have usurped the place of the old honest time-piece.

There has been no one thing in which more ingenuity and



talent has been displayed than in the arrangement and construction of time-pieces. Every conceivable form of mechanical combination has been introduced to give them motion. Of the form and fashion of the cases we may truly say that there is no limit or end, and the same remark will apply to the material of which these cases are constructed. We can enumerate wood, iron, glass, brass, silver, bronze, porcelain, marble, gutta-percha, cement, etc., and these materials are fashioned after the similitude of every angle or curve that geometry ever produced—formed after the likeness of every thing in nature and out of nature—flowers, animals, nymphs, and representations of heathen deities. We can take our selection as our taste or purse dictates.

Conspicuous among the multitude of forms presented for acceptance and purchase, we recognize the American Clocks



made by the Gilbert Manufacturing Company, of New York city. The accompanying cuts represent two of their justly celebrated time-pieces. The cases are of rosewood, varnished, and gilt, in the highest style of art, the design being secured by letters patent, while the movements, which render these time-pieces so valuable, are much improved upon former movements. Besides the superior finish, we observe the plates that hold the movements are held by screws instead of the ordinary method of brass or iron pins. Although to the novice these improvements may seem of minor importance, yet the expert will regard them with pleasure and appreciation. In addition to the designs shown we might enumerate nearly one hundred others, ranging from the "staid and sober" to the "fanciful and grotesque." The demand for the clocks has been so great that the Company have been compelled to put up new buildings and employ double the amount of hands that they formerly had. The number of hands they now employ is about one hundred and seventy. The factories are at Winsted, Conn., on the Naugatuck Railroad; the salesroom is at 12 Courtlandt street, New York City.

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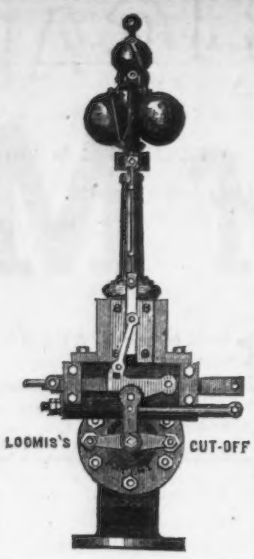

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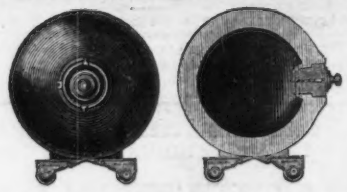

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